

# LA-UR-22-25977

Approved for public release; distribution is unlimited.

**Title:** RCT Training and Qualification

**Author(s):** Hill, Matthew Bailey

**Intended for:** Training Aid

**Issued:** 2022-06-27



Los Alamos National Laboratory, an affirmative action/equal opportunity employer, is operated by Triad National Security, LLC for the National Nuclear Security Administration of U.S. Department of Energy under contract 89233218CNA000001. By approving this article, the publisher recognizes that the U.S. Government retains nonexclusive, royalty-free license to publish or reproduce the published form of this contribution, or to allow others to do so, for U.S. Government purposes. Los Alamos National Laboratory requests that the publisher identify this article as work performed under the auspices of the U.S. Department of Energy. Los Alamos National Laboratory strongly supports academic freedom and a researcher's right to publish; as an institution, however, the Laboratory does not endorse the viewpoint of a publication or guarantee its technical correctness.

# RCT Training and Qualification



## The RCT Training Program

The RCT training program prepares Radiological Control Technicians to support the advancement of the laboratory's mission objectives while ensuring the health and safety of the workforce and public from radiological hazards, utilizing a multi-disciplinary, hands-on approach. Currently located at the MESA complex within the University of New Mexico – Los Alamos Campus, the RP Training department has established an immersive training environment that simulates realistic work conditions in which RCTs may develop the fundamental knowledge and skills required to control radiological work across the Laboratory.

## Training Program Outline

### *DOE Core and Site-Specific Academics – 240 Hrs*

The DOE Core and Site-Specific curricula consists of 240 hours of instructor led classroom lectures. All training is provided in a live instruction format and consist of training on the following topics:

#### DOE Core Curriculum:

- Basic Math and Algebra
- Unit Analysis and Conversion
- Physical Sciences
- Nuclear Physics
- Sources of Radiation
- Radioactivity and Radioactive Decay
- Interactions of Radiation with Matter
- Biological Effects of Radiation
- Radiological Protection Standards
- ALARA
- External Exposure Control
- Internal Exposure Control
- Radiation Detector Theory

#### LANL Site-Specific Curriculum:

- Radiological Documentation
- Communication Systems
- Counting Errors and Statistics
- Dosimetry
- Contamination Control
- Airborne Sampling Program
- Respiratory Protection
- Radiological Source Control
- Environmental Monitoring
- Access Control and Work Area Setup
- Radiological Work Coverage
- Shipment and Receipt of Radioactive Material
- Radiological Incidents and Emergencies
- Personnel Decontamination
- Radiological Considerations for First Aid

Classroom lectures, activities, and facility field trips are utilized to ensure adequate retention of training material. RCT candidates are required to complete a comprehensive qualification exam for both the DOE core and LANL site-specific material with a grade of 80% or higher. Prior to qualification, RCTs complete a final Oral Evaluation Board that covers a cross section of all learning objectives throughout the Academic and Practical Training Programs.

Learning objectives and approved course documentation are available upon request.



### *Simulator Based Practical Training – 240 Hrs*

The Practical Training Program establishes a hands-on approach to training that ensures the proficiency of RCTs prior to qualification. RCTs in training participate in dynamic learning activities and performance evaluations on the following tasks:

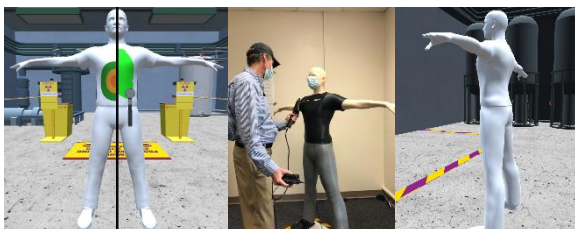
- Use of Anti-C PPE
- Performing Radiological Surveys
- Submitting Samples to HPAL
- Performing Item Release
- Posting Radiological Areas
- Performing Job Coverage
- Responding to Radiological Emergencies

To the extent practicable, simulation systems are utilized to familiarize RCTs in training with expected conditions that are found in the field. Systems that have been incorporated into the training program include:

- **VizRad Frisk** – a whole body frisking simulator that provides real time feedback to a contamination instrument while tracking and evaluating survey accuracy.

Key features include:

- Spatial recognition and tracking
- Audible alarms for frisking speed and distance
- Programmable scenarios consistent with the iPCM12 Simulator



- The **Simulated Source System** provides simulated radiation fields utilizing ultrasonic technology. The radiation fields are measured by radiation instrumentation and Electronic Personnel Dosimeters.

Key features include:

- Source boxes capable of producing simulated radiation fields from 0 mrem/hr – 5000 rad/hr
- Electronic Personnel Dosimeters with adjustable dose and dose rate alarms reinforce ALARA practices



- The **Simulated Contamination Monitor** provides simulated contamination results in an iPCM12.

Key features include:

- Programmable contaminated event scenarios
- Provides RCTs with experience in responding to personnel contamination events



RP-PROG-QS-002

Revision: 1



Effective Date: 03/01/2022

Next Review Date: 12/31/2024

**Environment, Safety, Health, Quality, Safeguards, and Security Directorate**  
**Radiation Protection Division**  
**Radiation Protection Programs**

## Qualification Standard

### Radiological Control Technician

#### Document Owner/Subject Matter Expert:

Developer Name (Print) Matthew Hill	Organization: RP-PROG	Signature: MATTHEW HILL (Affiliate) <small>Digitally signed by MATTHEW HILL (Affiliate) Date: 2022.02.17 14:49:34 -07'00'</small>	Date: 02/17/2022
Name: Kurt Hillmer	Organization: RP-PROG	Signature: Kurt Hillmer <small>Digitally signed by Kurt Hillmer Date: 2022.02.17 14:53:28 -07'00'</small>	Date: 2/17/2022

#### Derivative Classifier: ☒ DUSA: RADPRO

Name: Kurt Hillmer	Organization: RP-PROG	Signature: Kurt Hillmer <small>Digitally signed by Kurt Hillmer Date: 2022.02.17 14:53:51 -07'00'</small>	Date: 2/17/2022
-----------------------	--------------------------	---	--------------------

#### Approval Signatures:

RP-PROG Team Leader: Keith Luna	Organization: RP-PROG	Signature: KEITH LUNA (Affiliate) <small>Digitally signed by KEITH LUNA (Affiliate) Date: 2022.02.17 16:08:27 -07'00'</small>	Date: 02/17/2022
RP-PROG Group Leader: Garry Schramm	Organization: RP-PROG	Signature: GARRY SCHRAMM (Affiliate) <small>Digitally signed by GARRY SCHRAMM (Affiliate) Date: 2022.03.01 09:09:51 -07'00'</small>	Date: 3/1/2022
RP-PROG Division Leader: Stephanie Archuleta	Organization: RP-DO	Signature: STEPHANIE ARCHULETA (Affiliate) <small>Digitally signed by STEPHANIE ARCHULETA (Affiliate) Date: 2022.03.07 14:50:32 -07'00'</small>	Date:

*This copy is uncontrolled.*

*Users are responsible for ensuring they work to the latest approved version.  
To document a required read, Login to [UTrain](#), and go to the Advanced Search.*

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 2 of 45
	Revision: 1	Effective Date: 03/01/2022

### REVISION HISTORY

Document Number and Revision	Effective Date	Description of Changes
RP-PROG-QS-002, Rev. 0	07/01/2021	Initialization of qualification standard. This document supersedes RP-PROG-SOP-006, <i>Radiation Control Technician Training, Qualification, and Requalification</i> .
RP-PROG-QS-002, Rev. 1	03/01/2022	RCT Qualification Standard revised to incorporate the Tasked Based RCT Qualification per RP management discretion. Summary of Revision: <ul style="list-style-type: none"> <li>• Entry-Level Experience requirements revised to be 1 year job-related experience per the HR-ITS LANL Assessment Number 2020-0007.</li> <li>• Attachment 3 and 4 updated to reflect offered training within curr. 116.</li> <li>• Addition of Attachment 5 –Task Qualification of RCTs.</li> <li>• Precautions and Limitations revised to incorporate guidance on implementation of Tasked Based RCT Qualification</li> </ul>

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 3 of 45
	Revision: 1	Effective Date: 03/01/2022

## Table of Contents

1.0	Introduction .....	5
1.1	Purpose .....	5
1.2	Scope .....	5
1.3	Applicability .....	5
2.0	Precautions and Limitations .....	5
2.1	Precautions.....	5
2.2	Limitations .....	5
3.0	Analysis methodology .....	6
3.1	Overview .....	6
3.2	Summary of Analysis .....	6
3.2.1	Needs Analysis.....	7
3.2.2	Task List Development.....	7
3.2.3	Survey Methodology .....	7
3.2.4	Survey Analysis.....	7
3.2.5	Task-To-Training Validation .....	7
4.0	Implementing Instructions and Responsibilities.....	8
5.0	Program Elements.....	9
5.1	Entry Level Education and Experience Requirements.....	9
5.1.1	Entry Level Education Requirements .....	9
5.1.2	Entry Level Experience Requirements .....	9
5.2	Prerequisite Requirements.....	9
5.3	Medical Examination Requirements.....	9
5.4	Initial Training Requirements .....	9
5.4.1	RCT Initial Training Requirements.....	10
5.4.2	Task Qualified RCT Initial Training Requirements .....	10
5.5	Examination Requirements .....	10
5.5.1	Comprehensive Qualification Examinations .....	10
5.5.2	Module/Course Examinations .....	11
5.5.3	Operational Evaluations (On-the-Job Training and Practicals).....	12
5.5.4	Oral Evaluation Board (OEB).....	12
5.6	Exceptions to Training, Education, and/or Experience Requirements.....	13
5.6.1	Exceptions to Education and/or Experience Requirements.....	13
5.6.2	Radiological Worker II Equivalency.....	13
5.6.3	DOE Core Unit 1 Equivalency.....	13
5.7	Certification Requirements.....	14
6.0	Maintenance of Qualification.....	14
6.1	Initial Qualification Period .....	14
6.2	Requalification Requirements .....	14
6.2.1	RCT Requalification Requirements .....	14
6.2.2	Task Qualified RCT Requalification Requirements.....	15
6.3	Qualification and/or Certification Extension .....	15
6.4	Loss/Reinstatement of Qualification, Authorization, and/or Certification .....	15
6.4.1	Disqualification and Reinstatement.....	15
6.4.2	Qualification Suspension and Reinstatement.....	15
7.0	Definitions and Acronyms .....	16

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 4 of 45
	Revision: 1	Effective Date: 03/01/2022

7.1	Definitions .....	16
7.2	Acronyms.....	16
8.0	Records .....	17
9.0	References .....	17
10.0	Attachments or Appendices .....	17
	Attachment 1 – Needs Analysis Report.....	18
	Attachment 2 – Job Task Analysis Report .....	23
	Attachment 3 – Overview of Initial Training Requirements .....	35
	Attachment 4 – Task to Training Matrix.....	37
	Attachment 5 – Task Qualification of RCTs .....	40

### List of Tables

Table 1.	Implementing Instructions and Responsibilities .....	8
Table 2.	Training Decisions.....	24
Table 3.	RCT Position Validated Task List .....	27
Table 4.	RCT JTA DIF Survey Results and Training Recommendations .....	33
Table 5.	Initial Training Requirements .....	35
Table 6.	Task To Training Matrix (TTM).....	37
Table 7.	Task Qualified RCT Initial Training Requirements .....	45

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 5 of 45
	Revision: 1	Effective Date: 03/01/2022

## 1.0 INTRODUCTION

### 1.1 Purpose

This Qualification Standard (QS) documents the qualification requirements for the Radiological Control Technician (RCT) position within the Los Alamos National Laboratory (LANL) Associate Laboratory Directorate for Environment, Safety, Health, Quality, Safeguards, and Security (ALDESHQSS).

### 1.2 Scope

This document establishes the standard for the administration of the RCT qualification at Los Alamos National Laboratory to include but not limited to requirements for initial qualification, task qualification, and requalification.

### 1.3 Applicability

This document applies to all RCT Candidates seeking qualification to perform duties as an RCT within the Radiation Protection (RP) Division at Los Alamos National Laboratory.

## 2.0 PRECAUTIONS AND LIMITATIONS

### 2.1 Precautions

- Radiological Control Technicians in training are considered “RCT Candidates” and are not qualified to perform work. They may neither make independent decisions nor independently perform RCT duties outlined in this qualification standard.
- The RCT Training Program consists of the RCT Initial Training Program and the RCT Continuing Training Program. Requirements outlined for the RCT Training Program pertain to both the RCT Initial and Continuing Training Programs.
- If RCT Candidates are required to perform unescorted duties as a Radiological Worker or enter radiological areas without an escort prior to RCT qualification, then RCT Candidates Radiological Worker II Qualification is required.
- RCT Qualification is valid for a two-year period. If a qualified RCT leaves the RP organization and returns prior to the expiration date of their RCT qualification, the individual’s qualification is considered current. If the individual’s qualification has expired prior to their return, the individual must recomplete all initial training requirements outlined in this standard.
- General training records are considered Official Use Only Information and claim Exemption 6: Personal Privacy. P204-1, *Controlled Unclassified Information*, provides guidance for protecting, disseminating, marking, handling, decontrolling, and disposing of Controlled Unclassified Information.

### 2.2 Limitations

- Unqualified RCTs and/or RCT Candidates may perform work under the direct supervision of qualified individuals provided the supervising individual is qualified on the task being performed and are capable of intervening in the case of improper actions.

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 6 of 45
	Revision: 1	Effective Date: 03/01/2022

- RCTs who fail to maintain complete status in curricula are “unqualified” for all tasks outlined within the respective curricula and are prohibited from independently performing the outlined tasks until complete status is reinstated.
- Tasked Qualified RCTs are only qualified to perform tasks outlined in Attachment 5, *Task Qualification of RCTs*. Task qualification may only be granted to RCT 1’s. RCT 2’s, 3’s, 4’s, and 5’s are required to receive an RCT Qualification, in its entirety, as outlined by this standard.
- This qualification standard qualifies RCTs to perform the tasks outlined in Table 3, *RCT Position Validated Task List* of Attachment 2, *Job Task Analysis Report*. Additional facility specific training requirements may be required to authorize RCTs to perform work at a specific facility.

### 3.0 ANALYSIS METHODOLOGY

#### 3.1 Overview

This qualification standard uses a modified approach to the Systematic Approach to Training (SAT) as outlined in DOE-HDBK-1078-94, *Training Program Handbook: A Systematic Approach to Training*, which meets the requirements and expectations of Department of Energy (DOE) Orders 426.2, *Personnel Selection, Training, Qualification, and Certification Requirements for DOE Nuclear Facilities* and DOE O 426.1 *Federal Technical Capability*.

All modifications implemented in this qualification standard are attributed to the justification within DOE-HDBK-1078 that “Blending classical and alternative systematic approaches to training methods often yields the most effective product.” The modified approach outlined in this qualification standard utilizes a combination of DOE orders, DOE Handbooks, and industry guidance documents such as the NISP-TR-01, *Systematic Approach to Training Process Framework*.

Modifications were made to the DOE SAT process to incorporate guidance from NISP-TR-01 to develop a training program with additional emphasis on the importance of preparing workers to do their jobs safely, efficiently, effectively, while protecting the work force, the public, and the environment.

#### 3.2 Summary of Analysis

Training staff conducted an analysis between DOE-HDBK-1122-2009, *Program Management Guide* and the Radiological Control Technician qualification procedure, RP-PROG-SOP-006 *Radiation Control Technician Training, Qualification, and Requalification*. The procedural requirements were evaluated against the guidelines provided within the program management guide to determine if training requirements within the RCT Training Program were consistent with DOE expectation. This review, outlined in Attachment 1, *Needs Analysis Report* established the initial training requirements to support the qualification for RCTs at Los Alamos National Laboratory.

Training Staff and RP management identified a specific role known as a *Task Qualified RCT*. This role is intended for entry level RCT 1’s and limits RCT 1’s to the performance of low-risk radiological tasks. The detailed analysis is outlined in Attachment 5, *Task Qualification of RCTs*.

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 7 of 45
	Revision: 1	Effective Date: 03/01/2022

### **3.2.1 Needs Analysis**

The Needs Analysis Report documents the formal review process of applicable LANL Standard Operating Procedures, standard practices within the field, and industry studies employing job or task analysis for the RCT position.

### **3.2.2 Task List Development**

The analysis performed on the RCT position resulted in a task list utilized in the Job Task Analysis. NISP-TR-012, *Training and Qualification of Supplemental RP Technicians* served as the primary basis for the developed task list. A review between the referenced industry task list and the observed practices of RCTs in the field at LANL resulted in a list of 16 tasks containing 84 subtask elements. A committee of RP staff validated the task list prior to administering a survey questionnaire to job incumbents in the field. This questionnaire, referred to as the “DIF Survey, or DIF” measured the difficulty, importance, and frequency of the tasks performed as an RCT. Attachment 2, *Job Task Analysis Report* provides a detailed explanation for the analysis process used to determine the initial task list. The report outlines the tasks and sub-task elements associated with the RCT position at LANL.

### **3.2.3 Survey Methodology**

DOE-HDBK-1078-94 states the purpose of a survey questionnaire is to “verify the accuracy and validity of the initial task list and identify which tasks will be selected for training.” RP Training Staff administered a survey questionnaire to a prospective work group population. An intended audience of RCTs holding a variety of RCT qualification levels, HPFCs, and the RP Training Staff was chosen on Institutional Training Services’ recommendation that individuals [involved in the questionnaire] should be “job incumbents of all experience levels, subject matter experts, trainers of the job incumbents, and supervisors of the job incumbents.”

The DIF survey utilized an online survey tool known as “Survey Monkey.” RP Training Staff notified the intended audience on January 7<sup>th</sup>, 2021 to complete the DIF survey. Participation was encouraged by upper management. The DIF survey resulted in 69 respondents, and remained open until January 22<sup>nd</sup>, 2021. The RP Training Staff averaged all participants’ responses and they are provided in Attachment 2, *Job Task Analysis Report*.

### **3.2.4 Survey Analysis**

See Attachment 2, *Job Task Analysis Report* for a detailed overview of the analysis process used for this qualification standard.

### **3.2.5 Task-To-Training Validation**

A group of subject matter experts developed and verified the task list. A committee of RP Training Specialists, RCTs, HPFCs, and RP Management approved the final training recommendations. A roster of those in attendance is included in Attachment 2, *Job Task Analysis Report*.

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 8 of 45
	Revision: 1	Effective Date: 03/01/2022

#### 4.0 IMPLEMENTING INSTRUCTIONS AND RESPONSIBILITIES

<b>Table 1. Implementing Instructions and Responsibilities</b>		
	<b>Action</b>	<b>Responsibility</b>
Step 1	Verify the eligibility of candidates and initiate the hiring process	RP Manager for RCT Recruiting and Hiring
Step 2	Ensure the RCT candidate is assigned to the following curriculum: <ul style="list-style-type: none"> <li>• Curricula 115, Radiological Worker II Training Requirements, and</li> <li>• Curricula 116, Radiological Control Technician Requirements</li> </ul>	RP Training Coordinator
Step 3	Implement the initial training program for the RCT candidate	RP Core Programs Instructors
Step 4	Complete the requirements of the initial training program	RCT Candidate
Step 5	Review and approve the RCT candidate as a qualified LANL RCT	RP Manager for RP Core Programs
Step 6	Provide the facility assignment to RCT	RP Manager for RCT Recruiting and Hiring
Step 7	Assign and ensure the completion of all facility specific training requirements	Facility Training Representative
Step 8	Ensure the completion of continuing training requirements outlined in this qualification standard	RCT and Immediate Supervisor
Step 9	Verification of completion of retraining requirements is completed and documented on the RP-PROG-FORM-025, <i>RCT Record of Requalification</i>	RP Training Coordinator

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 9 of 45
	Revision: 1	Effective Date: 03/01/2022

## 5.0 PROGRAM ELEMENTS

### 5.1 Entry Level Education and Experience Requirements

#### 5.1.1 Entry Level Education Requirements

Educational requirements should be consistent with those stipulated in industry standard commitments, regulatory documents, and the LANL Job Description Repository. At a minimum, a high school education or equivalent is required for entry into this program.

#### 5.1.2 Entry Level Experience Requirements

Experience requirements should be consistent with those stipulated in industry standard commitments, regulatory documents, and the LANL Job Description Repository. At a minimum, one year job-related experience is required for entry into this program.

When an individual has previous experience, education, and/or training, exemptions from portions of the education and training requirements is acceptable, as described in 5.6 *Exceptions to Training, Education, and/or Experience Requirements*.

### 5.2 Prerequisite Requirements

No prerequisite requirements exist for individuals seeking qualification through this qualification standard.

### 5.3 Medical Examination Requirements

There are no medical examination requirements required for this qualification. Certain work activities may require the use of respiratory protection. In such cases, RCTs must complete all medical examination requirements as outlined in the Respiratory Protection Program maintained by Occupational Safety (OSH-ISH).

### 5.4 Initial Training Requirements

**NOTE:** Attachment 3, *Overview of Initial Training Requirements*, provides a detailed overview of required courses for qualification.

[1] RCT Candidates must complete RP-PROG-FORM-105, *RCT Candidate Memorandum of Understanding (MOU)*.

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 10 of 45
	Revision: 1	Effective Date: 03/01/2022

#### **5.4.1 RCT Initial Training Requirements**

[1] RCT Candidates must complete all courses listed in Curriculum 116, which is comprised of the following subcurricula:

- Subcurriculum 2530, RCT – DOE Core Unit 1
- Subcurriculum 2531, RCT – DOE Core Unit 2
- Subcurriculum 2532, RCT – Core Procedure Training
- Subcurriculum 2858, RCT – Mandatory Training
- Subcurriculum 2857, RCT – Oral Board Exam
- Subcurriculum 2856, RCT – Core Instrument Training
- Subcurriculum 13662, RCT – Practical Training

#### **5.4.2 Task Qualified RCT Initial Training Requirements**

[1] RCT 1's seeking task qualification must complete all courses listed in Curriculum 14997, which is comprised of the following subcurricula:

- Subcurriculum 115, Radiological Worker II Training
- Subcurriculum 2532, RCT – Core Procedure Training
- Subcurriculum 2856, RCT – Core Instrument Training
- Subcurriculum 14999, Task Qualified RCT - Practical Training

### **5.5 Examination Requirements**

#### **5.5.1 Comprehensive Qualification Examinations**

[1] The RCT Training Program consists of the following qualification exams:

- Unit 1 Comprehensive Exam
- Unit 2 Comprehensive Exam

[2] Written exams are closed book except for materials provided by the testing center or approved satellite-proctoring facility.

[3] A minimum passing score of 80% on exams is required for satisfactory completion.

[4] IF an RCT or RCT candidate fails a comprehensive qualification exam, THEN:

[a] The RCT is suspended from performing RCT duties. See Section 6.4.2, *Qualification Suspension and Reinstatement* for follow-up actions.

[b] The RP Training Coordinator, or designee, will provide written notification of the failed attempt to the individual's RLM.

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 11 of 45
	Revision: 1	Effective Date: 03/01/2022

- [c] The RP Training Coordinator, or designee, will perform a review of missed exam objectives from the RCT candidate's exam attempt to determine if there is a need to invalidate, remove, or modify questions.
- [d] Remedial training must be provided for the RCT Candidate on missed examination objectives by training staff qualified as classroom instructors through the Training Specialist Qualification Program (TSQP).
- [e] Remedial training must be documented on RP-FORM-102, *RP-PROG Remedial Training Form*.
- [5] IF this is the RCT's or the RCT candidate's second failed attempt, THEN the RP Training Coordinator, or designee, shall notify the RP-PROG Team Leader or Group Leader and the RCT's RLM.
- [6] IF an RCT or RCT Candidate fails a comprehensive qualification exam three times, THEN the RP Division Leader will make a determination to retain the individual as an RCT.
- [7] IF the individual is retained as an RCT or RCT candidate, THEN a maximum of three additional examination attempts may be provided to the individual.

**NOTE:** Following three failed examination attempts, an individual may not reattempt the same examination within a six-month period from the first examination attempt. Failure to complete an exam within six attempts will result in a denial of an RCT qualification.

### **5.5.2 Module/Course Examinations**

- [1] The RCT Training Program consists of the following course exams:
  - RCT – RAM Shipment Exam
- [2] Course exams are closed book except for materials provided by the testing center or approved satellite-proctoring facility.
- [3] A minimum score of 80% is required to pass a course/module examination.
- [4] IF an RCT or an RCT candidate fails a course exam, THEN:
  - [a] The RCT is suspended from performing RCT duties. See Section 6.4.2, *Qualification Suspension and Reinstatement* for follow-up actions.
  - [b] The RP Training Coordinator, or designee, will provide written notification of the failed attempt to the individual's RLM.
  - [c] The RP Training Coordinator, or designee, will perform a review of missed exam objectives from the RCT candidate's exam attempt to determine if there is a need to invalidate, remove, or modify questions.
  - [d] Remedial training must be provided for the RCT Candidate on missed examination objectives by training staff qualified as classroom instructors through the Training Specialist Qualification Program (TSQP).
  - [e] Remedial training must be documented on RP-FORM-102, *RP-PROG Remedial Training Form*.

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 12 of 45
	Revision: 1	Effective Date: 03/01/2022

- [5] IF this is the RCT's or the RCT candidate's second failed attempt, THEN the RP-PROG Training Coordinator, or designee, shall notify the RP-PROG Team Leader or Group Leader and the individual's RLM of the failed examination attempt.
- [6] IF an RCT or RCT Candidate fails a course/module exam three times, THEN the RP Division Leader will make a determination to retain the individual as an RCT or RCT Candidate.
- [7] IF the individual is retained as an RCT or RCT candidate THEN a maximum of three additional examination attempts may be provided to the individual.

**NOTE:** Following three failed course/module examination attempts, an individual may not reattempt the same examination within a six-month period from the first examination attempt. Failure to complete a course/module examination within six attempts will result in a denial of an RCT qualification.

### **5.5.3 Operational Evaluations (On-the-Job Training and Practicals)**

- [1] The RCT Training Program shall consist of the following Operational Evaluations:
- On-the-Job Training Evaluations
  - Practical Training Evaluations
- [2] Operational Evaluations must be performed by OJT Instructor/Evaluators qualified through the Training Specialist Qualification Program (TSQP).
- [3] Minimum passing criteria for OJT Evaluations are contained in the approved OJT Lesson Plan.
- [4] A minimum score of 80% is required to pass a practical evaluation.
- [5] IF an RCT candidate fails an operational evaluation, THEN:
- [a] Missed objectives must be documented on the evaluation.
  - [b] Remedial training must be provided by OJT Instructor/Evaluators qualified through the Training Specialist Qualification Program (TSQP).
  - [c] Document the remedial training on RP-FORM-102, *RP-PROG Remedial Training Form*.
  - [d] Re-perform the operational evaluation.

### **5.5.4 Oral Evaluation Board (OEB)**

- [1] OEB members must complete UTrain Course #9568, *RCT Oral Examination Member Training*.
- [2] OEB members require an authorization to perform their function, serving as either an OEB Member or OEB Chair, as documented on RP-FORM-104, *RP-PROG OEB Member Role Request Form*.
- [3] Candidates must pass all critical sections contained within the Oral Evaluation Board, and pass 80% of the general knowledge questions to pass the Oral Evaluation Board.
- [4] Only approved OEB materials are permitted in the conduct of an Oral Evaluation Board.
- [5] IF an RCT or RCT Candidate fails an OEB, THEN:

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 13 of 45
	Revision: 1	Effective Date: 03/01/2022

[a] Document missed objectives on the evaluation record.

[b] Provide remedial training on missed examination objectives by training staff qualified through the Training Specialist Qualification Program (TSQP).

[c] Document the remedial training on RP-FORM-102, *RP-PROG Remedial Training Form*.

[6] IF this is the RCT's or the RCT candidate's second failed attempt, THEN the RP Training Coordinator, or designee, shall notify the RP-PROG Team Leader or Group Leader and the individual's RLM of the failed examination attempt.

[7] IF an RCT or RCT Candidate fails an Oral Evaluation Board three times, THEN the RP Division Leader will make a determination to retain the individual as an RCT or RCT Candidate.

**NOTE:** Following three failed OEB attempts, an individual may not reattempt the oral board within a six-month period from the first attempt. Failure to complete an Oral Evaluation Board within six attempts will result in a denial of an RCT qualification.

#### **5.5.5 Final Qualification Determination**

[1] Completion of the initial training requirements must be documented on an Initial Qualification Record.

[2] The RP-PROG Training Manager must approve the Initial Qualification Record to grant the RCT qualification.

### **5.6 Exceptions to Training, Education, and/or Experience Requirements**

#### **5.6.1 Exceptions to Education and/or Experience Requirements**

[1] Exceptions to education and/or experience requirements may be requested by a Responsible Line Manager.

[2] Exception requests must be documented using FORM 2136, *Request an Exception to Training, Education, and/or Experience Requirements*.

**NOTE:** LANL allows a formal educational degree (conferred) to substitute for required experience or visa-versa when determining whether a candidate meets the minimum qualifications established for a job and/or determining years of relevant experience ("YRE"). Guidance may be requested from a Human Resource Generalist when determining exceptions to education and/or experience.

#### **5.6.2 Radiological Worker II Equivalency**

A review of DOE-HDBK-1130-2008, *Radiological Worker Training* and the LANL RCT Training Program course materials was performed to ensure consistency between the two programs. The RCT Training Program incorporates all learning objectives covered in Radworker II. RCT Candidates that successfully qualify as an RCT meet the training requirements for completion of Radiological Worker II (RWII). Maintenance of the RCT qualification maintains qualification for the Radworker II qualification.

#### **5.6.3 DOE Core Unit 1 Equivalency**

[1] Equivalency may be granted to individuals with documented supporting evidence for the completion of any of the following criteria:

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 14 of 45
	Revision: 1	Effective Date: 03/01/2022

- [a] A current DOE “Core” Card and an outline of the sponsoring facilities training program for Unit 1.
- [b] Documented registration as a registered practitioner by the National Registry of Radiation Protection Technologists.
- [c] Documented Certification as a Health Physicist by the American Board of Health Physics (ABHP).

## 5.7 Certification Requirements

The RCT Position does not require certifications to perform work at LANL.

## 6.0 MAINTENANCE OF QUALIFICATION

### 6.1 Initial Qualification Period

The RCT qualification is valid for a two-year period effective on the date of approval of the Initial Qualification Record. The Task Qualified RCT qualification does not expire and remains valid so long as the individual remains within the Radiation Protection division.

### 6.2 Requalification Requirements

#### 6.2.1 RCT Requalification Requirements

- [1] RCTs are required to requalify biennially (every two years).
- [2] The following items are required prior to the RCT qualification expiration date:
  - [a] Complete 40 hours of continuing training to include the following at a minimum:
    - Training for JTA Tasks 13, 14, and 15 (see attachment 2)
  - [b] Pass the Unit I OR Unit II comprehensive exam:
    - In years 2022 and 2023, RCTs will take the Unit I exam.
    - In years 2024 and 2025, RCTs will take the Unit II exam.
    - This pattern shall repeat for subsequent years.
  - [c] Attend UTrain Course 44219, RCT – Packaging and Transport of Radioactive Material and pass UTrain Test 44553, RCT – RAM Shipment Exam.
  - [d] Document all completed requalification requirements using RP-PROG-FORM-025, *RCT Requalification Record*.
- [3] IF requalification requirements are not completed prior to the RCT qualification expiration date, **THEN the RCT will be disqualified.** See Section 6.4.1 *Disqualification and Reinstatement* for actions to reinstate RCT qualification.

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 15 of 45
	Revision: 1	Effective Date: 03/01/2022

### **6.2.2 Task Qualified RCT Requalification Requirements**

- [1] Task Qualified RCTs must remain qualified as Radiological workers through the RWII training program.
- [2] IF requalification requirements for RWII are not completed prior to the RWII qualification expiration date, **THEN the Task Qualified RCT will be suspended.** See Section 6.4.2 *Qualification Suspension and Reinstatement*.

### **6.3 Qualification and/or Certification Extension**

- [1] Extensions to the RCT qualification may be requested by a Responsible Line Manager (RLM) prior to the qualification expiration date.
- [2] Document extension requests using FORM 2135, *Request for Qualification or Certification Extension*.

### **6.4 Loss/Reinstatement of Qualification, Authorization, and/or Certification**

**NOTE:** RCTs that are disqualified or suspended for any reason may not independently perform tasks outlined in this qualification standard.

#### **6.4.1 Disqualification and Reinstatement**

- [1] RCTs and Task Qualified RCTs may be disqualified for the following reasons:
  - [a] Insufficient training completed to maintain qualification.
  - [b] Task Qualified RCTs that have left the RP organization.
  - [c] At the discretion of RP-PROG Group Leader, RP Deputy Division Leader, or the RP Division Leader.
- [2] The individual and their manager will receive written notification of disqualification.
- [3] The following items must be completed to reinstate qualification:
  - [a] Pass the Unit I AND Unit II written exams.
  - [b] Attend UTrain Course 44219, RCT – Packaging and Transport of Radioactive Material. AND pass UTrain Test 44553, RCT – RAM Shipment Exam.
  - [c] Pass an RCT Oral Evaluation Board.
- [4] The individual and the individual's RLM will receive written notification of RCT qualification reinstatement.

#### **6.4.2 Qualification Suspension and Reinstatement**

- [1] RCTs and Task Qualified RCTs may have qualifications suspended for the following reasons:
  - [a] Failed attempt on a comprehensive qualification exam, RWII exam, or course exam.
  - [b] At the request of an individual's RLM.

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 16 of 45
	Revision: 1	Effective Date: 03/01/2022

[c] At the discretion of RP-PROG Group Leader, RP Deputy Division Leader, or the RP Division Leader.

[2] The individual and their manager will receive written notification of suspension.

[3] IF the suspension of qualification is due to a failed qualification exam, THEN the qualification is restored upon a successful completion attempt of the respective unit exam.

[4] The RP-PROG Group Leader, RP Deputy Division Leader, or RP Division Leader retains authority for restoring RCT qualification following a suspension per their discretion.

[5] The individual and the individual's responsible manager will receive written notification of RCT qualification reinstatement.

## 7.0 DEFINITIONS AND ACRONYMS

### 7.1 Definitions

For standardized radiation protection definitions, see the glossary in P121, *Radiation Protection*. For general standardized definitions, see LANL [Definition of Terms](#).

### 7.2 Acronyms

See LANL [Acronym Master List](#).

DOE	Department of Energy
LANL	Los Alamos National Laboratory
CHP	Certified Health Physicist
ALDESHQSS	Associate Laboratory Directorate for Environment, Safety, Health, Quality, Safeguards, and Security
MOU	Memorandum of Understanding
NRRT	National Registry Radiation Protection Technologists
OEB	Oral Evaluation Board
RCT	Radiological Control Technician
TSQP	Training Specialist Qualification Program
UGS	Undergraduate Student
QS	Qualification Standard
RP	Radiation Protection
SAT	Systematic Approach to Training
NISP	Nuclear Industry Standard Practice
DIF	Difficulty, Importance, Frequency
JTA	Job Task Analysis
HPFC	Health Physics Field Coordinator
RLM	Responsible Line Manager
TSQP	Training Staff Qualification Program

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 17 of 45
	Revision: 1	Effective Date: 03/01/2022

OJT	On-the-Job Training
YRE	Years of Relevant Experience
RWII	Radiological Worker II
ABHP	American Board of Health Physics
SME	Subject Matter Expert

## 8.0 RECORDS

**NOTE:** RP Programs Group is the office of record for all radiological records created during the implementation of its procedures unless otherwise noted.

- [1] UTrain is the primary system for maintaining RCT training records.
- [2] Manage records according to P1020-1, Laboratory Records Management.
- [3] For processing instructions, contact the RP-PROG records point-of-contact at [rp-training@lanl.gov](mailto:rp-training@lanl.gov).

## 9.0 REFERENCES

- DOE-HDBK-1078-94, *Training Program Handbook: A Systematic Approach to Training*.
- DOE-HDBK-1122-2009, *Radiological Control Technician Training, February 2009*.
- NISP-TR-01, *Systematic Approach to Training Process*.
- NISP-TR-012, *Training and Qualification of Supplemental RP Technicians*.
- NRC Memorandum, *Health Physics Position: Task Qualification of HP Technicians, September 1991*.
- DOE O 426.2, *Personnel Selection, Training, Qualification, and Certification Requirements for DOE Nuclear Facilities*.
- DOE O 426.1, *Federal Technical Capability*.
- ACAD 93-008, *Guidelines for Training and Qualification of Radiological Protection Technicians, March 2016*.
- ITS-FSD-001 R2.1, *Conduct of Training Manual*.

## 10.0 ATTACHMENTS OR APPENDICES

### List of Attachments

Attachment 1 – Needs Analysis Report.....	18
Attachment 2 – Job Task Analysis Report .....	23
Attachment 3 – Overview of Initial Training Requirements .....	35
Attachment 4 – Task to Training Matrix.....	37
Attachment 5 – Task Qualification of RCTs .....	40

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 18 of 45
	Revision: 1	Effective Date: 03/01/2022

## ATTACHMENT 1 – NEEDS ANALYSIS REPORT

Page 1 of 5

### Attendees:

Stephanie Archuleta – RP Division Leader  
 Garry Schramm – RP-PROG Group Leader  
 Keith Luna – RP-PROG Team Leader  
 Matthew Hill – RP Training Coordinator

### Summary:

An analysis of DOE-HDBK-1122-2009, *Program Management Guide* was conducted to determine deficiencies within the current RCT qualification program. Radiological Control Technician Qualification Standards were evaluated against provided guidelines found within the DOE handbook. A determination for required initial training classes to support the RCT qualification was made and is outlined in the remainder of this document.

The RCT Initial Training Program contains three phases:

1. Phase I – Academic Training
2. Phase II – Practical Training
3. Phase III – Oral Evaluation Board

### Phase I – Academic Training

The discussion group identified seven courses within the guidelines that have been previously omitted from the program:

1. Module 2.01 – Radiological Documentation
2. Module 2.02 – Communication Systems
3. Module 2.09 – Environmental Monitoring
4. Module 2.16 – Radiation Survey Instrumentation
5. Module 2.17 – Contamination Monitoring Instrumentation
6. Module 2.18 – Air Sampling Equipment
7. Module 2.19 – Counting Room Equipment

### Unit 1 – Fundamental Academics:

The decision was made to revise all unit 1 modules to include less detail and provide a general overview to the DOE provided learning objectives. The following courses are included in the Unit 1 – Fundamental Academics:

1. Module 1.01 – Basic Mathematics and Algebra
2. Module 1.02 – Unit Analysis and Conversions
3. Module 1.03 – Physical Sciences
4. Module 1.04 – Nuclear Physics

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 19 of 45
	Revision: 1	Effective Date: 03/01/2022

## **ATTACHMENT 1 – NEEDS ANALYSIS REPORT**

Page 2 of 5

5. Module 1.05 – Sources of Radiation
6. Module 1.06 – Radioactivity and Radioactive Decay
7. Module 1.07 – Interaction of Radiation with Matter
8. Module 1.08 – Biological Effects of Radiation
9. Module 1.09 – Radiological Protection Standards
10. Module 1.10 – ALARA
11. Module 1.11 – External Exposure Control
12. Module 1.12 – Internal Exposure Control
13. Module 1.13 – Radiation Detector Theory

Lesson examinations were discussed and are not required for the RCT Initial Training Program.

### **Unit 2 – Site Academics:**

The decision was made to revise unit 2 courses to include less detail and provide a general overview to the DOE provided learning objectives. The following courses will be required for qualification:

1. Module 2.01 – Radiological Documentation
2. Module 2.02 – Communication Systems
3. Module 2.03 – Counting Errors and Statistics
4. Module 2.04 – Dosimetry
5. Module 2.05 – Contamination Control
6. Module 2.06 – Airborne Sampling Program/Methods
7. Module 2.07 – Respiratory Protection
8. Module 2.08 – Radioactive Source Control
9. Module 2.09 – Environmental Monitoring
10. Module 2.10 – Access Control and Work Area Setup
11. Module 2.11 – Radiological Work Coverage
12. Module 2.12 – Shipment and Receipt of Radioactive Material
13. Module 2.13 – Radiological Incidents and Emergencies
14. Module 2.14 – Personnel Decontamination
15. Module 2.15 – Radiological Considerations for First Aid

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 20 of 45
	Revision: 1	Effective Date: 03/01/2022

## **ATTACHMENT 1 – NEEDS ANALYSIS REPORT**

Page 3 of 5

An evaluation of the learning objectives associated with the omitted modules resulted in the following programmatic changes:

1. Module 2.09 – Environmental Monitoring
  - a. Objectives 2.09.01 – 2.09.04 and 2.09.06 have been reinstated
2. Module 2.16 – Radiation Survey Instrumentation
  - a. Objective 2.16.01 incorporated in Module 1.13
3. Module 2.17 – Contamination Monitoring Instrumentation
  - a. Objective 2.17.01 incorporated in Module 1.13
4. Module 2.18 – Air Sampling Equipment
  - a. Objective 2.18.01 incorporated into Module 2.06
5. Module 2.19 – Counting Room Equipment
  - a. The evaluation resulted in the removal of Module 2.19 from the RCT Training Program

### **Procedure Overview Courses:**

The following instructor led course will be required for the completion of the RCT Initial Training Program:

1. RP-PROG-TP-200, Radiation Protection Manual Overview

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 21 of 45
	Revision: 1	Effective Date: 03/01/2022

## ATTACHMENT 1 – NEEDS ANALYSIS REPORT

Page 4 of 5

### Phase II – Practical and On-the-Job Training

#### Core Instrument OJTs:

On the Job Trainings (OJTs) will be required for the operation of the following instruments:

1. Operating the Thermo RadEye SX with Dual-Scintillator Probes
2. Operating the Eberline Model RO-20
3. Operating the Bicron the Micro-Rem Meter
4. Operating the Eberline E-600 and Associated Probes
5. Operating the Ludlum 139 with Air Proportional Detector
6. Operating the ESP-1 with Associated Probes
7. Operating the Canberra Alpha Sentry CAM
8. Operating the Eberline Teletector
9. Operation of the Ludlum 2929, 3030, and 3030E Alpha/Beta Sample Counter
10. Operational Checks of Neutron Instruments
11. Operation of Tritium Air Monitors

#### Practical Training:

The committee discussed the common tasks for an RCT and developed a task list that is common for all facilities. This provided a basis for the practical training program that is applicable to all facilities within Los Alamos National Laboratory.

Prior to qualification, RCTs must complete the following practical training courses:

1. Use of Anti-C PPE
2. Radiological Surveys
3. Submitting Samples to HPAL
4. Radiological Posting
5. Item Release
6. Job Coverage
7. Emergency Response

Each practical training course contains two sections, a training exercise and an evaluation. RCTs are required to complete all practical evaluations with a passing grade of  $\geq 80\%$ .

The Comprehensive Practical Assessment (CPA) has been developed to efficiently qualify RCTs with a fundamental understanding of radiological protection fundamentals (i.e. RCT 4s or higher and HPFCs). The CPA will evaluate performance on the following items:

1. Use of Anti-C PPE
2. Radiological Surveys
3. Radiological Posting
4. Item Release
5. Job Coverage

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 22 of 45
	Revision: 1	Effective Date: 03/01/2022

## **ATTACHMENT 1 – NEEDS ANALYSIS REPORT**

Page 5 of 5

Satisfactory performance of the Comprehensive Practical Assessment will grant credit for the completion of the following practical training modules:

1. Use of Anti-C PPE
2. Radiological Surveys
3. Radiological Posting
4. Item Release
5. Job Coverage

Unsatisfactory performance in any of the evaluated areas will require the RCT to perform the training and evaluation associated with the failed areas.

### **Phase III – Oral Evaluation Board (OEB)**

Prior to sitting for an OEB the following requirements must be completed:

1. Unit 1 – Fundamental Academics Examination
2. Unit 2 – Site Academics Examination
3. RAM Shipment Examination and Associated Class
4. Completion of Phase I requirements
5. Completion of Phase II requirements
6. OEB Candidate Training

Oral Evaluation Boards are the final evaluation to determine if RCTs should be qualified and deployed to the field. Only RP-PROG approved OEB materials may be used and the evaluation is conducted in accordance with RP-PROG standards.

The RP-PROG Training Manager makes the final determination for qualification and documents the satisfactory completion of the initial training requirements through the completion of an initial qualification record.

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 23 of 45
	Revision: 1	Effective Date: 03/01/2022

## ATTACHMENT 2 – JOB TASK ANALYSIS REPORT

Page 1 of 12

### Purpose:

Radiation Protection Programs (RP-PROG) management and training staff determined the existing RCT JTA from September of 2017 and the RCT qualification procedure RP-PROG-SOP-006, *Radiation Control Technician Training, Qualification, and Requalification* required a revision due to significant changes to Radiation Protection procedures, training, and organizational structures. The standards for RCT qualification have been moved from a procedure to an approved LANL qualification standard.

The Radiological Control Technician (RCT) Job Task Analysis (JTA) is a systematic methodology that employs a graded approach to establish minimum training requirements necessary to ensure qualification of RCTs at Los Alamos National Laboratory. The JTA defines the tasks associated with RCT qualification, identifies the required knowledge, skills, and abilities to perform the defined tasks, outlines the minimum training requirements necessary to achieve and maintain qualifications of the RCT workforce, and ensures the RCT training program meets the requirements and expectations of DOE Order DOE O 426.2, *Personnel Selection, Training, Qualification, and Certification Requirements for DOE Nuclear Facilities*.

### Methodology:

This standard incorporates DOE and industry standard practices to establish the minimum training requirements for the RCT qualification program. Standards for training development performed within DOE Complexes are outlined in DOE-HDBK-1078-94 *Training Program Handbook: A Systematic Approach to Training*. The handbook outlines the use of Analysis, Design, Development, Implementation, and Evaluation phases for the development of training programs. Industry standards are set forth in ACAD 93-008, *Guidelines for Training and Qualification of Radiological Protection Technicians*, NISP-RP-012, *Training and Qualification of Supplemental RP Technicians*, and NISP-TR-01, *Systematic Approach to Training Process*. These documents were evaluated to ensure consistency in the implementation of a Systematic Approach to Training when developing the training program. NISP-TR-01, *Systematic Approach to Training Process*, served as the framework for the Job Task Analysis. Certain processes were amended within the document's recommendations, such as RP Training's decision to remove DIF score modifications based on continuous use procedures as this is not standard practice for how Radiation Protection is conducted at LANL.

A review of existing RCT Job Tasks, RP procedures, and training learning objectives resulted in 16 tasks used to populate Table 3, *RCT Position Validated Task List*. This task list was surveyed for the Difficulty, Importance, and Frequency (DIF) of each task and was distributed to RCTs, Health Physics Field Coordinators, and RP Training Staff to determine the training recommendations for each job task.

### Survey Administration:

In order to determine the DIF values for each task, a survey was developed and distributed via the Survey Monkey online survey tool. The survey was limited to 16 core RCT job tasks with sub-task elements listed in each task. Subtask elements shown in Table 3, *RCT Position Validated Task List* were replaced with task descriptions in the DIF Survey to minimize the time to complete the survey description and encourage participation. If retraining was recommended based on DIF survey results, all sub-task elements would be required to be retrained.

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 24 of 45
	Revision: 1	Effective Date: 03/01/2022

## ATTACHMENT 2 – JOB TASK ANALYSIS REPORT

Page 2 of 12

A DIF survey evaluates three metrics: Difficulty, Importance, and Frequency. Difficulty was rated as simple, difficult, or very difficult, with assigned point values of 2.7 points, 5.7 points, and 7.7 points, respectively. Importance was rated as low risk, medium risk, or high risk, with assigned point values of 1 point, 3 points, or 5 points, respectively. Frequency was rated as less than quarterly, greater than quarterly, and annually, with assigned point values of 1 point, 3 points, or 5 points, respectively.

A training recommendation is based on the total of all averaged DIF scores received during the survey. Preliminary training determinations were outlined based on the “Training Decision Table” referenced from NISP-TR-01, *Systematic Approach to Training* Process, and is provided in the table below:

Table 2. Training Decisions	
Total DIF Score	Training Recommendation
IF ≤ 6	No Training Required
IF > 6 ≤ 12	Initial Training
IF > 12	Initial AND Continuing Training
	Frequency Recommendation
IF ≥ 14	1-3 years
IF > 12 < 14	4-6 years

A group of subject matter experts developed and verified the RCT core task list. The DIF survey was distributed to an intended audience of RCTs holding different RCT qualification skill levels, HPFCs, and the RP Training Staff based on LANL recommendations that individuals should be “Job incumbents of all experience levels, subject matter experts, trainers of the job incumbents, and supervisors of the job incumbents.”

### Results:

The DIF survey utilized Survey Monkey to solicit participation from the intended audience, and the RP Training Staff solicited participation through email notification. The initial survey resulted in 69 respondents and closed on January 22, 2021. The results were averaged among all participants and are recorded in Table 4, *RCT JTA DIF Survey Results and Training Recommendations*.

A committee of RP Training Specialists, RCTs, HPFCs, and RP Management adopted the final training recommendations. A detailed analysis was not performed for any tasks.

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 25 of 45
	Revision: 1	Effective Date: 03/01/2022

## ATTACHMENT 2 – JOB TASK ANALYSIS REPORT

Page 3 of 12



November 5<sup>th</sup>, 2020

### Attendance Roster – Initial Task List Validation

**Attendees:** (official attendance record on file)

Keith Luna – RP Programs Team Lead

Matthew Hill – RP Training Coordinator

Matthew Cheatham – HP, RP Training

Timothy Vance – HPFC, RP Training

Justin Gillilan – HP, RR Training

Kurt Hillmer – HP, RP Training

Cassandra Redmond – HP, RP Training

James Harper – HPFC, RP Field Support

Walter Short – HP, RP Training

Brecque Smith – RCT, RP Programs

Sean Tullock – HPFC, RP Training

### RCT qualification Standard Initial Task List Validation

#### Overview:

This professional workshop was conducted to propose, draft, and validate a task list associated with the RCT position at LANL. The finalized draft of this task list was to be used as the basis for a DIF survey administered to a representative audience of the RP division in the field. The finalized list highlighted 16 tasks related to RCT work at LANL with 84 sub-tasks.

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 26 of 45
	Revision: 1	Effective Date: 03/01/2022

## ATTACHMENT 2 – JOB TASK ANALYSIS REPORT

Page 4 of 12



March 11<sup>th</sup>, 2021

### Attendance Roster – Training Recommendation Validation

**Attendees:** (official attendance record on file)

Garry Schramm – RP Programs Group Lead

Keith Luna – RP Programs Team Lead

Matthew Hill – RP Training Coordinator

Sean Sandoval – HPFC, RP-TA55

Caleb Ginorio – HP, RP Programs

Dominic Pompeo – HPFC, RP Field Support

Kevin Andrews – HPFC, RP Field Support

### RCT qualification Standard Final Task List Validation

#### Overview:

This professional workshop was conducted to validate a task list associated with the RCT position at LANL. A DIF survey was made available to members of RP Division on January 7<sup>th</sup>, 2021 until January 22<sup>nd</sup>, 2021. After receiving feedback from 69 participants, this group of subject matter experts discussed, approved, and formally recommended the finalized task list to RP Management.

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 27 of 45
	Revision: 1	Effective Date: 03/01/2022

## ATTACHMENT 2 – JOB TASK ANALYSIS REPORT

Page 5 of 12

**Table 3. RCT Position Validated Task List**

NOTE: The abbreviation (TQ) designates a task that has been determined to be a low-risk radiological task that is eligible for the Task Qualified RCT Position.

TASK	Task/Sub-Tasks	Description
<b>Task 1 (TQ)</b>	<b>Operate Portable Radiation Survey Instruments</b>	This task covers the operational aspects of portable radiation survey instruments. Subtasks include performance of pre-operability checks, performance tests, instrument maintenance, and instrument operation.
1-01	Perform operability checks (battery, zero, mechanical etc.)	
1-02	Calculate MDDR / MDA / DL	
1-03	Operate beta/gamma ion chambers (RO-20, µrem)	
1-04	Operate GM detectors (Teletector)	
1-05	Operate NRD (Radeye PX, ESP-1, E-600)	
1-06	Perform instrument maintenance (replace cords, batteries, etc.)	
<b>Task 2 (TQ)</b>	<b>Operate Portable Contamination Survey Instruments</b>	This task covers the operational aspects of portable contamination survey instruments. Subtasks include performance of pre-operability checks, performance tests, instrument maintenance, and instrument operation.
2-01	Perform operability checks	
2-02	Perform corrections to dpm/100cm <sup>2</sup> (energy level, probe size, efficiencies etc.)	
2-03	Calculate MDA / DL	
2-04	Operate beta/gamma friskers	
2-05	Operate alpha friskers	
2-06	Operate dual scintillation probes (Radeye SX, E-600)	
2-07	Perform instrument maintenance (replace cords, batteries, etc.)	
2-08	Establish instrument reference readings	

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 28 of 45
	Revision: 1	Effective Date: 03/01/2022

## ATTACHMENT 2 – JOB TASK ANALYSIS REPORT

Page 6 of 12

<b>Task 3 (TQ)</b>	<b>Operate Radiological Counting Instruments</b>	This task covers the operation of the Ludlum 3030 series and RadEye counting systems. Subtasks include performance of pre-operability checks, performance tests, and instrument maintenance.
3-01	Perform initial setup	
3-02	Conduct performance checks	
3-03	Operate benchtop counters (3030E, Radeye SX 43-10)	
<b>Task 4 (TQ)</b>	<b>Perform Radiation and Contamination Surveys</b>	This task covers the performance of radiation and contamination surveys. Subtasks include performance of Shallow Dose Evaluations, Sum of All Radiations, area radiation surveys, quantitative and qualitative area contamination surveys, submission of samples to HPAL, and documentation of surveys.
4-01	Perform Shallow Dose Evaluations (SDE)	
4-02	Calculate Sum of All Radiations (SAR)	
4-03	Perform radiation surveys	
4-04	Perform contamination surveys (smears, LAS, direct frisk)	
4-05	Perform field screens of contamination smears	
4-06	Submit samples to HPAL	
4-07	Document radiological surveys	
<b>Task 5 (TQ)</b>	<b>Collect and Evaluate Radiological Air Samples</b>	This task covers collection and evaluation of air samples. Subtasks include performance of air sampler flow rate verification, change out of filters, operation of Hi and Low volume air samplers, placement of air sampling equipment, calculation of DAC values, submission of air samples to HPAL, and documentation of air sampling results.
5-01	Perform an air sampler flow-rate verification	
5-02	Perform an air sample filter change (FAS, giraffe)	
5-03	Operate Lo-Vol "Giraffe" air sampler	
5-04	Determine air sampler placement (BZ, GA, etc.)	
5-05	Calculate Derived Air Concentration (DAC)	
5-06	Submit air samples to HPAL	
5-07	Document air sample results	

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 29 of 45
	Revision: 1	Effective Date: 03/01/2022

## ATTACHMENT 2 – JOB TASK ANALYSIS REPORT

Page 7 of 12

Task 6	Releasing Items from Radiologically Controlled Areas	This task covers determining clearance classes for item release, performing item release, conditional release, free release, and completing required documentation.
6-01	Determine item clearance class	
6-02	Perform item release	
6-03	Perform item conditional release	
6-04	Perform item free release	
6-05	Complete required documentation	
Task 7	Posting Radiological Areas	This task covers determining entry and exit requirements, and establishing boundaries while posting areas for radiation, contamination, and airborne radioactivity.
7-01	Determine applicable postings	
7-02	Establish boundaries to radiological areas	
7-03	Determine entry and exit requirements	
7-04	Post/Down-Post areas for radiation hazards	
7-05	Post/Down-Post areas for contamination hazards	
7-06	Post/Down-Post areas for airborne hazards	
Task 8 (TQ)	Labeling Radioactive Material	This task identifies requirements associated with labeling radioactive materials to include completing HPRMS tags and determining storage locations of RAM.
8-01	Identify labeling requirements for radioactive material	
8-02	Complete labeling documentation	
8-03	Determine storage location of radioactive material	

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 30 of 45
	Revision: 1	Effective Date: 03/01/2022

## ATTACHMENT 2 – JOB TASK ANALYSIS REPORT

Page 8 of 12

<b>Task 9</b>	<b>Control of Access to RAs, HRAs, and VHRAs</b>	This task identifies the requirements identified in P121 Table 9-4 detailing the three levels of access control for radiological areas at LANL.
9-01	Implement level 1 controls for radiological areas	
9-02	Implement level 2 controls for HRA > 1 rem/hr @ 30cm	
9-03	Implement level 3 controls for VHRA	
9-04	Identify required levels of control for posted areas	
<b>Task 10 (TQ)</b>	<b>Control HEPA Vacuums and Ventilation Equipment</b>	This task covers the control and operation of HEPA vacuums and ventilation equipment. Subtasks include supporting the use of equipment, and opening of equipment.
10-01	Support the use of vacuum cleaners and portable HEPA	
10-02	Open vacuum cleaners or portable HEPA	
<b>Task 11</b>	<b>Perform Radiological Job Coverage</b>	This task covers various aspects of radiological job coverage. Items include performance of RWP briefs, implementation of RWP work controls, job coverage surveys, job coverage ALARA practices, work coverage documentation, and whole body frisks.
11-01	Conduct RWP briefings	
11-02	Implement work controls per RWP/IWD	
11-03	Monitor radiological work conditions	
11-04	Complete required documentation	
11-05	Reinforce ALARA practices	
11-06	Perform whole body frisk	
<b>Task 12 (TQ)</b>	<b>Packaging and Transporting RP Radioactive Material</b>	This task covers providing guidance for the packaging and transportation of RP samples, sources, instruments and used respirators.
12-01	Package RP samples	
12-02	Package RP radioactive sources	
12-03	Package RP survey instruments and sampling equipment	

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 31 of 45
	Revision: 1	Effective Date: 03/01/2022

## ATTACHMENT 2 – JOB TASK ANALYSIS REPORT

Page 9 of 12

12-04	Transport RP owned radioactive material	
12-05	Package and transport used respirators	
<b>Task 13</b>	<b>Supporting Packaging, Receipt, and Transportation of Non-RP Radioactive Materials</b>	This task covers actions to receive or assist in the shipment of radioactive material, opening packages, and the specific requirements of the Nevada National Security Site (NNSS).
13-01	Supporting receipt of RAM at its initial receiving location	
13-02	Supporting receipt of RAM at the facility	
13-03	Opening RAM packages	
13-04	Supporting packaging and transportation of RAM	
13-05	Perform NNSS shipment surveys	
<b>Task 14</b>	<b>Respond to a Radiological Medical Emergency</b>	This task covers the required actions in the event of a major or minor injury in radiological areas. Follow up actions include survey documentation and medical facility actions.
14-01	Respond to a major injury within a controlled area	
14-02	Respond to a minor injury within a controlled area	
14-03	Complete required documentation	
<b>Task 15</b>	<b>Respond to Radiological Events</b>	This task covers response to events including ARM and CAM alarms, dosimeter alarms, and contamination monitor alarms with associated actions for personnel contamination, nasal swipes, and spills. Follow up actions include re-entry and documenting the event with an RPIN.
15-01	Respond to an uncontrolled release of hazardous/Rad material	
15-02	Respond to Continuous Air Monitoring (CAM) alarm	
15-03	Respond to radioactive spills	
15-04	Respond to an Area Radiation Monitor (ARM) alarm	
15-05	Respond to an Electronic Personal Dosimeter (EPD) alarm	
15-06	Respond to a Stationary Contamination Monitor alarm	

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 32 of 45
	Revision: 1	Effective Date: 03/01/2022

## ATTACHMENT 2 – JOB TASK ANALYSIS REPORT

Page 10 of 12

15-07	Perform personnel decontamination	
15-08	Perform nasal swipes	
15-09	Initiate/Edit RP Initial Notifications (RPIN)	
<b>Task 16 (TQ)</b>	<b>Operate Continuous Air Monitors</b>	This task covers operation of the Canberra Alpha Sentry, Alpha 7, and the Eberline AMS-4 Beta CAMs, as well as performance test and filter changes.
16-01	Operate the Alpha Sentry CAM	
16-02	Operate the Alpha 7 CAM	
16-03	Operate the AMS-4 beta CAM	
16-04	Conduct performance tests on CAMs	
16-05	Perform an air sample filter change on CAMs	

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 33 of 45
	Revision: 1	Effective Date: 03/01/2022

## ATTACHMENT 2 – JOB TASK ANALYSIS REPORT

Page 11 of 12

**Table 4. RCT JTA DIF Survey Results and Training Recommendations**

Task #	Task	Difficulty	Importance	Frequency	Total DIF		
						Recommendation	Training Frequency
1	Operate Portable Radiation Survey Instruments	3.13	3.87	1.49	8.49	Initial	Once
2	Operate Portable Contamination Survey Instruments	3.25	3.89	1.47	8.61	Initial	Once
3	Operate Radiological Counting Instruments	3.61	3.77	1.51	8.89	Initial	Once
4	Perform Radiation and Contamination Surveys	4.42	3.89	1.52	9.83	Initial	Once
5	Collect and Evaluate Radiological Air Samples	4.49	3.99	1.55	10.03	Initial	Once
6	Releasing Items from Radiologically Controlled Areas	3.75	3.82	1.47	9.04	Initial	Once
7	Posting Radiological Areas	3.81	3.96	3.82	11.59	Initial	Once
8	Labeling Radioactive Material	3.73	3.45	1.33	8.51	Initial	Once
9	Control of Access to RAs, HRAs, and VHRAs	4.35	4.35	1.89	10.59	Initial	Once
10	Control HEPA Vacuums and Ventilation Equipment	4.90	4.03	2.40	11.33	Initial	Once
11	Perform Radiological Job Coverage	5.02	4.27	1.38	10.67	Initial	Once

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 34 of 45
	Revision: 1	Effective Date: 03/01/2022

## ATTACHMENT 2 – JOB TASK ANALYSIS REPORT

Page 12 of 12

Task #	Task	Difficulty	Importance	Frequency	Total DIF	Recommendation	Training Frequency
12	Packaging and Transporting RP Radioactive Material	3.81	3.13	1.44	8.38	Initial	Once
13	Supporting Packaging, Receipt, and Transportation of Non-RP Radioactive Materials	4.93	3.79	1.85	10.57	Initial + Retrain*	Once + Every 2 Years*
14	Respond to a Radiological Medical Emergency	5.67	4.52	2.81	13.00	Initial + Retrain	Once + Every 4 Years
15	Respond to Radiological Events	5.71	4.55	1.98	12.24	Initial + Retrain	Once + Every 4 Years
16	Operate Continuous Air Monitors	3.90	3.67	1.89	9.46	Initial	Once

**Note:** Difficulty, Importance, and Frequency values were determined by averaging all responses. Total DIF Value is the sum of the individual scores.

\*The DIF recommendation for task #13 is initial training only. The retraining frequency for task #13 has been set to a 2-year cycle to align with the RCT 2-year requalification cycle.

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 35 of 45
	Revision: 1	Effective Date: 03/01/2022

### ATTACHMENT 3 – OVERVIEW OF INITIAL TRAINING REQUIREMENTS

Page 1 of 2

**Table 5. Initial Training Requirements**

Item	Number	Course Title
Subcurriculum 2532, RCT – Core Procedure Training		
Course	50065	RCT – RP-PROG-TP-200 Radiation Protection Manual
Subcurriculum 2530, RCT – DOE CORE UNIT 1		
Course	7826	RCT: Module 1.01
Course	7827	RCT: Module 1.02
Course	7828	RCT: Module 1.03
Course	7829	RCT: Module 1.04
Course	7830	RCT: Module 1.05
Course	7831	RCT: Module 1.06
Course	7832	RCT: Module 1.07
Course	7833	RCT: Module 1.08
Course	7834	RCT: Module 1.09
Course	7835	RCT: Module 1.10
Course	7836	RCT: Module 1.11
Course	7837	RCT: Module 1.12
Course	7839	RCT: Module 1.13
Subcurriculum 2531, RCT – DOE CORE UNIT 2		
Course	52130	RCT: Module 2.01
Course	52131	RCT: Module 2.02
Course	8768	RCT: Module 2.03
Course	8769	RCT: Module 2.04
Course	8770	RCT: Module 2.05
Course	8772	RCT: Module 2.06
Course	8773	RCT: Module 2.07
Course	8774	RCT: Module 2.08
Course	52198	RCT: Module 2.09
Course	8776	RCT: Module 2.10
Course	8777	RCT: Module 2.11
Course	8778	RCT: Module 2.12
Course	8779	RCT: Module 2.13
Course	8780	RCT: Module 2.14
Course	8781	RCT: Module 2.15

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 36 of 45
	Revision: 1	Effective Date: 03/01/2022

### ATTACHMENT 3 – OVERVIEW OF INITIAL TRAINING REQUIREMENTS

Page 2 of 2

Item	Number	Course Title
Subcurriculum 2858, RCT – Mandatory Training		
Course	44219	RCT – Packaging and Transport of Radioactive Material
Course	44553	RCT – RAM Shipment Exam
Subcurriculum 2857, RCT – ORAL BOARD EXAM		
Course	9605	RCT ORAL BOARD TRAINING FOR CANDIDATES
Course	9563	RCT: Oral Evaluation Board
Subcurriculum 2856, RCT – CORE INSTRUMENT TRAINING		
OJT	46711	RCT: Operation of the Ludlum 2929, 3030, and 3030E
OJT	46713	RCT: Operating the Thermo RadEye SX with Dual-Scintillator Probe
OJT	51932	RCT: Operation of Portable Air Tritium Monitors
OJT	43119	RCT: Operation of the Bicron Micro-Rem Meter
OJT	43120	RCT: Operation of the Eberline Teletector
OJT	43121	RCT: Operation of the Canberra Alpha Sentry CAM (ASM1000 CAM)
OJT	43122	RCT: Operation of the Eberline Model RO-20
OJT	52275	RCT: Operation of the Eberline E-600 with SHP-380 AB Detector
OJT	43125	RCT: Operation of the Ludlum 139 with Air Proportional probe
OJT	43126	RCT: Operation of the Eberline ESP-1 and SRM 100 with HP-210, HP-260 and HP-360 probes
OJT	32389	RCT: Operation of the RadEye PX with NRD
Subcurriculum 13662, RCT – Practical Training		
Course	50436	Use of Anti-C PPE
Course	50437	Radiological Surveys
Course	50439	Submitting Samples to HPAL
Course	50440	Item Release
Course	50441	Job Coverage
Course	50442	Radiological Emergency Response
Course	52058	Radiological Posting
<p><b>Note:</b> Unit 1 and Unit 2 subcurricula titles are abbreviated.</p>		

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 37 of 45
	Revision: 1	Effective Date: 03/01/2022

## ATTACHMENT 4 – TASK TO TRAINING MATRIX

Page 1 of 3

Table 6. Task To Training Matrix (TTM)			
TASK	Task Description	Training Recommendation	Training
Task 1	Operate Portable Radiation Survey Instruments	Initial Training	OJT 43119 OJT 43120 OJT 43122 OJT 32389 Course 7839
Task 2	Operate Portable Contamination Survey Instruments	Initial Training	OJT 46713 OJT 43125 OJT 43126 OJT 52275 Course 7839
Task 3	Operate Radiological Counting Instruments	Initial Training	OJT 46711
Task 4	Perform Radiation and Contamination Surveys	Initial Training	Course 50065 Course 50437
Task 5	Collect and Evaluate Radiological Air Samples	Initial Training	Course 8772 (5-04 and 5-05) Course 50065 Course 50439
Task 6	Releasing Items from Radiologically Controlled Areas	Initial Training	Course 50065 Course 50440

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 38 of 45
	Revision: 1	Effective Date: 03/01/2022

#### ATTACHMENT 4 – TASK TO TRAINING MATRIX

Page 2 of 3

TASK	Task Description	Training Recommendation	Training
Task 8	Labeling Radioactive Material	Initial Training	Course 8774 Course 50065 Course 50440
Task 9	Control of Access to RAs HRAs and VHRAs	Initial Training	Course 52058
Task 10	Control HEPA Vacuums and Ventilation Equipment	Initial Training	Course 50441
Task 11	Perform Radiological Job Coverage	Initial Training	Course 7835      Course 8780 Course 8770      Course 50441 Course 8773 Course 8777 Course 50441
Task 12	Packaging and Transporting RP Radioactive Material	Initial Training	Course 50439
Task 13	Supporting Packaging, Receipt, and Transportation of Non-RP Radioactive Materials	Initial Training	Course 44219 Course 44553 Course 8778
		Continuing Training (Every 2 Years)	Course 44219 Course 44553

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 39 of 45
	Revision: 1	Effective Date: 03/01/2022

#### ATTACHMENT 4 – TASK TO TRAINING MATRIX

Page 3 of 3

TASK	Task Description	Training Recommendation	Training
Task 14	Respond to a Radiological Medical Emergency	Initial Training	Course 50442 Course 8781
		Continuing Training (Every 4 Years)	Course 50442 (or equivalent course)
Task 15	Respond to Radiological Events	Initial Training	Course 50442 Course 8779
		Continuing Training (Every 4 Years)	Course 50442 (or equivalent course)
Task 16	Operate Continuous Air Monitors	Initial Training	OJT 43121 OJT 51932
<b>Note:</b> Learning objectives for each course are found within the respective course SAT documentation.			

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 40 of 45
	Revision: 1	Effective Date: 03/01/2022

## ATTACHMENT 5 – TASK QUALIFICATION OF RCTS

Page 1 of 6

### Role Definition

Task qualification is defined as granting a subset of qualifications for a position at the task level. The Radiological Control Technician position may grant task qualification for pre-designated low-risk radiological tasks (denoted by a **TQ**) which have been identified in Table 3, *Task Qualified RCT Validated Task List* and the Task Qualified RCT needs analysis. The needs analysis provided within this attachment addresses the “Junior RCT Qualification.” The term Task Qualified RCT later replaced Junior RCT following the approval of the needs analysis and is the same role.

### Eligibility for Task Qualification

Task qualification may only be granted to RCT 1’s. RCT 2’s, 3’s, 4’s, and 5’s are required to complete the RCT Qualification, in its entirety, as outlined by this standard.

### Overview of Task Qualified RCT Qualifications

Task Qualified RCTs are qualified to perform work independently on all tasks outlined below:

Task 1: Operate Portable Radiation Survey Instruments

Task 2: Operate Portable Contamination Survey Instruments

Task 3: Operate Radiological Counting Instruments

Task 4: Perform Radiation and Contamination Surveys

Task 5: Collect and Evaluate Radiological Air Samples

Task 8: Label Radioactive Material

Task 10: Control HEPA Vacuums and Ventilation Equipment

Task 12: Packaging and Transporting RP Owned Radioactive Material

Task 16: Operate Continuous Air Monitors

### Task-to-Training Matrix

All tasks were derived from the initial RCT Job Task Analysis Report. Refer to Table 6, *Task To Training Matrix (TTM)* for all required courses to support the Task Based RCT Qualification.

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 41 of 45
	Revision: 1	Effective Date: 03/01/2022

## ATTACHMENT 5 – TASK QUALIFICATION OF RCTS

Page 2 of 6

### Task Qualified RCT Needs Analysis:



RP Division

### Proposal: Junior Radiological Control Technician Qualification Program

#### Overview

This proposal outlines a strategy to expand the available talent pool of individuals to serve as Radiological Control Technicians (RCTs) at Los Alamos National Laboratory. Current practices within the Radiation Protection Division include strategic hiring initiatives to recruit and hire RCTs at the 2-5 levels. This proposal establishes a framework to improve upon training program efficiency by the inclusion of an entry-level RCT1 position into the Radiation Protection organization, increasing both class availability and deployment frequency for fully qualified RCTs.

#### Junior Radiological Control Technician Qualification

The Junior RCT qualification will qualify an RCT1 to perform independent low risk radiological tasks outlined in the RCT qualification standard. Tasks include:

- Task 1: Operate Portable Radiation Survey Instruments
- Task 2: Operate Portable Contamination Survey Instruments
- Task 3: Operate Radiological Counting Instruments
- Task 4: Perform Radiation and Contamination Surveys
- Task 5: Collect and Evaluate Radiological Air Samples
- Task 6: Label Radioactive Material
- Task 7: Control HEPA Vacuums and Ventilation Equipment
- Task 8: Packaging and Transporting RP Owned Radioactive Material
- Task 9: Operate Continuous Air Monitors

**NOTE:** Qualified Junior RCTs will receive a qualification card that identifies tasks they are qualified to perform independently and tasks in which they are not.

Qualified Junior RCTs are not authorized to independently:

- Perform radiological job coverage
- Perform item release
- Respond to radiological emergencies
- Perform surveys to support shipments of radioactive material
- Modify radiological postings

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 42 of 45
	Revision: 1	Effective Date: 03/01/2022

## ATTACHMENT 5 – TASK QUALIFICATION OF RCTS

Page 3 of 6

October 27<sup>th</sup>, 2021

Page 2

### Program Optimization

In order to accommodate the Junior RCT qualification into the training program, an additional practical training space is required. The training space will allow for higher RCT throughput and more frequent deployment of RCTs to the field. This practical training space will allow for two training pathways to support the RCT1, RCT2/3, and RCT4+ qualification groups.

Of all newly qualified RCTs, RCT2/3 positions represent the overwhelming majority at 82% (avg.), with RCT4+ positions accounting for 18% (avg.). RCT1 position numbers are expected to be less than that of RCT2/3s.

**Table 1: Newly Qualified RCTs**

	2020	2021
Total RCTs Qualified	65	43
RCT 2/3s	52 (80%)	36 (84%)
RCT 4+	13 (20%)	7 (16%)

Based on the above, a training schedule was developed (Attachment A) to maximize RCT2/3 class availability and include a pathway for the two remaining qualification groups (RCT1, RCT4+).

### Program Implementation

The Junior RCT qualification will be defined within the RCT Qualification Standard and will be restricted to personnel at the RCT1 position. Personnel in an RCT1 position can qualify as an RCT, but must pass the Unit 1 Comprehensive Examination prior to their entry into Unit 2 instruction of an RCT2/3 qualification class. RCT1s who complete RCT qualification will be considered for promotion to an RCT2, provided all advancement requirements are met.

### Eligibility for Advancement to an RCT2 Position

DOE O. 426.2 sets the minimum education and experience requirements for organization personnel assigned to Hazard Category 2 and 3 Nonreactor Nuclear Facilities. The three requirements that must be met include: the individual's education (HS diploma, AS/BS/MS degrees, etc.), the number of years of job related experience, and the number of years of nuclear work experience. The requirement for individuals hired into the Radiation Protection organization for an RCT position is a minimum of 1-year job related experience.

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 43 of 45
	Revision: 1	Effective Date: 03/01/2022

## ATTACHMENT 5 – TASK QUALIFICATION OF RCTS

Page 4 of 6

October 27<sup>th</sup>, 2021

Page 3

LANL requirements for the RCT1 and RCT2 positions are listed below:

Position	Minimum Education and Experience Requirements*
Radiological Control Technician 1	HS diploma and 1 year job related experience
Radiological Control Technician 2	HS diploma and 1-2 years job-related experience
* Per HR Job Description Repository	

### Prerequisite Actions

The implementation of the Junior RCT qualification program is contingent upon completion of the following items:

#### 1. Acquisition of additional practical room at the Mesa training facility

Summary: As discussed above

Need by date: NLT 12/3/2021

#### 2. Transfer of training personnel to RP-PROG

Summary: The RCT training program requires the additional hired training staff in order to implement this proposal. Need by date takes into account TSQP qualification delays. A special RP-PROG TSQP training class is tentatively scheduled with HR-ITS for the second week of December.

Need by date: NLT 12/6/2021

#### 3. Revision of the RCT Qualification Standard, RP-PROG-QS-002

Summary: The RCT qualification standard is designed to support an RCT qualification and does not include a Junior RCT qualification as a defined subset of RCT tasks. A needs analysis will be conducted to support the revision.

Expected completion date: 12/3/2021

#### 4. Establish UTrain curricula for the Junior RCT qualification

Summary: Curricula needed for personnel and program management

Expected completion date: NLT 12/10/2021

#### 5. Draft an initial qualification record

Summary: DOE O 426.2 requires training manager approval prior to the qualification of RCTs. An initial qualification record for the Junior RCT qualification is required to support implementation.

Expected completion date: NLT 12/10/2021

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 44 of 45
	Revision: 1	Effective Date: 03/01/2022



## ATTACHMENT 5 – TASK QUALIFICATION OF RCTS

Page 5 of 6

October 27<sup>th</sup>, 2021

Page 4

### Approval Signatures:

RP-PROG Group Leader:  Garry R. Schramm	Organization:  RP-PROG	Signature:  GARRY SCHRAMM (Affiliate)  <small>Digitally signed by GARRY SCHRAMM (Affiliate) Date: 2022.01.04 10:10:53 -07'00'</small>	Date:  1/4/22
RP Division Leader:  Stephanie Archuleta	Organization:  RP-DO	Signature:  Stephanie A Archuleta  <small>Digitally signed by Stephanie A Archuleta Date: 2022.01.10 09:32:00 -07'00'</small>	Date:  1/10/22

Title: Qualification Standard Radiological Control Technician	No: RP-PROG-QS-002	Page 45 of 45
	Revision: 1	Effective Date: 03/01/2022

## ATTACHMENT 5 – TASK QUALIFICATION OF RCTS

Page 6 of 6

### Overview of Initial Training Requirements:

Table 7. Task Qualified RCT Initial Training Requirements		
Item	Number	Course Title
Subcurriculum 2532, RCT – Core Procedure Training		
Course	50065	RCT – RP-PROG-TP-200 Radiation Protection Manual
Subcurriculum 2856, RCT – CORE INSTRUMENT TRAINING		
OJT	46711	RCT: Operation of the Ludlum 2929, 3030, and 3030E
OJT	46713	RCT: Operating the Thermo RadEye SX with Dual-Scintillator Probe
OJT	51932	RCT: Operation of Portable Air Tritium Monitors
OJT	43119	RCT: Operation of the Bicron Micro-Rem Meter
OJT	43120	RCT: Operation of the Eberline Teletector
OJT	43121	RCT: Operation of the Canberra Alpha Sentry CAM (ASM1000 CAM)
OJT	43122	RCT: Operation of the Eberline Model RO-20
OJT	52275	RCT: Operation of the Eberline E-600 with SHP-380 AB Detector
OJT	43125	RCT: Operation of the Ludlum 139 with Air Proportional probe
OJT	43126	RCT: Operation of the Eberline ESP-1 and SRM 100 with HP-210, HP-260 and HP-360 probes
OJT	32389	RCT: Operation of the RadEye PX with NRD
Subcurriculum 14999, Task Qualified RCT – Practical Training		
Course	50436	Use of Anti-C PPE
Course	50437	Radiological Surveys
Course	50439	Submitting Samples to HPAL
Subcurriculum 115, Radiological Worker II Training Requirements		
Course	20301	Radiological Worker II Classroom Training
TEST	12909	Radiological Worker II Examination
TEST	49525	Radiological Worker II Two-Year Refresher Quiz
TEST	12910	Radiological Worker II Practical Evaluation

**Course Title:** Radiological Control Technician  
**Module Title:** Basic Mathematics and Algebra  
**Module Number:** 1.01

**Objectives:**

- 1.01.01 Add, subtract, multiply, and divide fractions.
- 1.01.02 Add, subtract, multiply, and divide decimals.
- 1.01.03 Convert fractions to decimals and decimals to fractions.
- 1.01.04 Convert percent to decimal and decimal to percent.
- 1.01.05 Add, subtract, multiply, and divide signed numbers.
- 1.01.06 Add, subtract, multiply, and divide numbers with exponents.
- 1.01.07 Find the square roots of numbers.
- 1.01.08 Convert between numbers expressed in standard form and in scientific notation.
- 1.01.09 Add, subtract, multiply, and divide numbers expressed in scientific notation.
- 1.01.10 Solve equations using the "Order of Mathematical Operations."
- 1.01.11 Perform algebraic functions.
- 1.01.12 Solve equations using common and/or natural logarithms.

**Introduction**

Radiological control operations frequently require the RCT to use arithmetic and algebra to perform various calculations. These include scientific notation, unit analysis and conversion, radioactive decay calculations, dose rate/distance calculations, shielding calculations, stay-time calculations. A good foundation in mathematics and algebra is important to ensure that the data obtained from calculations is accurate. Accurate data is crucial to the assignment of proper radiological controls.

**References:**

1. DOE-HDBK-1014/1-92 (June 1992) "Mathematics: Volume 1 of 2"; DOE Fundamentals Handbook Series.

**Course Title:** Radiological Control Technician  
**Module Title:** Unit Analysis & Conversion  
**Module Number:** 1.02

**Objectives :**

- 1.02.01 Identify the commonly used unit systems of measurement and the base units for mass, length, and time in each system.
- 1.02.02 Identify the values and abbreviations for SI prefixes.
- 1.02.03 Given a measurement and the appropriate conversion factor(s) or conversion factor table, convert the measurement to the specified units.
- 1.02.04 Using the formula provided, convert a given temperature measurement to specified units.

**INTRODUCTION**

A working knowledge of the unit analysis and conversion process is necessary for the Radiological Control Technician. It is useful for air and water sample activity calculations, contamination calculations, and many other applications. This lesson will introduce the International System of Units (SI), the prefixes used with SI units, and the unit analysis and conversion process. Many calculations accomplished in radiological control are actually unit conversions, not complex calculations involving formulas that must be memorized.

**REFERENCES:**

- 1. "Health Physics and Radiological Health Handbook"; Shleien; 1992.
- 2. DOE-HDBK-1010-92 (June 1992) "Classical Physics" DOE Fundamental Handbook; US Department of Energy.
- 3. "Chart of the Nuclides"; Sixteenth Edition, Knolls Atomic; 2003.

**UNITS AND MEASUREMENTS**

Units are used in expressing physical quantities or *measurements*, i.e., length, mass, etc. All measurements are actually relative in the sense that they are comparisons with some standard unit of measurement. Two items are necessary to express these physical quantities: a number which expresses the magnitude and a unit which expresses the dimension. A number and a unit must both be present to define a measurement. Measurements are algebraic quantities and as such may be mathematically manipulated subject to algebraic rules.

*Module 1.03 Physical Sciences*

---

**Course Title:** Radiological Control Technician  
**Module Title:** Physical Sciences  
**Module Number:** 1.03

**Objectives :**

- 1.03.01 Define the following terms as they relate to physics:
  - a. Work
  - b. Force
  - c. Energy
- 1.03.02 Identify and describe four forms of energy.
- 1.03.03 State the Law of Conservation of Energy.
- 1.03.04 Distinguish between a solid, a liquid, and a gas in terms of shape and volume.
- 1.03.05 Identify the basic structure of the atom, including the characteristics of subatomic particles.
- 1.03.06 Define the following terms:
  - a. Atomic number
  - b. Mass number
  - c. Atomic mass
  - d. Atomic weight
- 1.03.07 Identify what each symbol represents in the X notation.
- 1.03.08 State the mode of arrangement of the elements in the Periodic Table.
- 1.03.09 Identify periods and groups in the Periodic Table in terms of their layout.
- 1.03.10 Define the terms as they relate to atomic structure:
  - a. Valence shell
  - b. Valence electron

**INTRODUCTION**

This lesson introduces the RCT to the concepts of energy, work, and the physical states of matter. Knowledge of these topics is important to the RCT as he or she works in environments where materials can undergo changes in state, resulting in changes in the work environment.

**Course Title:** Radiological Control Technician  
**Module Title:** Nuclear Physics  
**Module Number:** 1.04

**Objectives :**

- 1.04.01 Identify the definitions of the following terms:
  - a. Nucleon
  - b. Nuclide
  - c. Isotope
- 1.04.02 Identify the basic principles of the mass-energy equivalence concept.
- 1.04.03 Identify the definitions of the following terms:
  - a. Mass defect
  - b. Binding energy
  - c. Binding energy per nucleon
- 1.04.04 Identify the definitions of the following terms:
  - a. Fission
  - b. Criticality
  - c. Fusion

**INTRODUCTION**

Nuclear power is made possible by the process of nuclear fission. Fission is but one of a large number of nuclear reactions which can take place. Many reactions other than fission are quite important because they affect the way we deal with all aspects of handling and storing nuclear materials. These reactions include radioactive decay, scattering, and radiative capture. This lesson is designed to provide an understanding of the forces present within an atom.

**Course Title:** Radiological Control Technician  
**Module Title:** Sources of Radiation  
**Module Number:** 1.05

**Objectives :**

- 1.05.01 Identify the following four sources of natural background radiation including the origin, radionuclides, variables, and contribution to exposure.
  - a. Terrestrial
  - b. Cosmic
  - c. Internal Emitters
  - d. Radon
- 1.05.02 Identify the following four sources of artificially produced radiation and the magnitude of dose received from each.
  - a. Nuclear Fallout
  - b. Medical Exposures
  - c. Consumer Products
  - d. Nuclear Facilities

**INTRODUCTION**

Apart from the amount of radiation a worker may receive while performing work, they will also be exposed to radiation because of the very nature of our environment. All individuals are subject to some irradiation even though they may not work with radioactive substances. This natural source of exposure is often referred to as ***background radiation***.

Studies of the nature and origin of this source of exposure to man have revealed three main components: terrestrial radiation (which includes the radioactivities of the earth's surface, air and water), cosmic radiation, and the naturally occurring radionuclides of the human body. One might add that man-made sources influence the contribution from some of these sources. The amount which each of these factors contributes varies with the locale.

The study of these factors throughout the world is of value for a number of reasons. Foremost among these is that the use of such data provides a basis or standard from which allowable exposure limits for radiation workers may be developed. In areas where the levels are much higher because of larger concentrations of natural radioactive materials, knowledge may be gained about human hereditary effects at these increased levels. Such data are also needed in assessing the impact on, or contribution of a nuclear facility to the existing concentrations in a given area. In the design of buildings and/or shielding for low-level work, it is of value to know the radioactive contents of the substances used. Often the levels inside a building are higher than those outside of the building because this factor has been neglected.

**Course Title:** Radiological Control Technician  
**Module Title:** Radioactivity & Radioactive Decay  
**Module Number:** 1.06

**Objectives :**

- 1.06.01 Identify how the neutron to proton ratio is related to nuclear stability.
- 1.06.02 Identify the definition for the following terms:
  - a. radioactivity
  - b. radioactive decay
- 1.06.03 Identify the characteristics of alpha, beta, and gamma radiations.
- 1.06.04 Given simple equations identify the following radioactive decay modes:
  - a. alpha decay
  - b. beta decay
  - c. positron decay
  - d. electron capture
- 1.06.05 Identify two aspects associated with the decay of a radioactive nuclide.
- 1.06.06 Identify differences between natural and artificial radioactivity.
- 1.06.07 Identify why fission products are unstable.
- 1.06.08 Identify the three naturally-occurring radioactive families and end product of each.
- 1.06.09 Given a nuclide, locate its block on the Chart of the Nuclides and identify the following for that nuclide:
  - a. atomic number
  - b. atomic mass
  - c. natural percent abundance
  - d. stability
  - e. half-life
  - f. types and energies of radioactive emissions
- 1.06.10 Given the Chart of Nuclides, trace the decay of a radioactive nuclide and identify the stable end-product.
- 1.06.11 Identify the definition of the following units:
  - a. curie
  - b. becquerel
- 1.06.12 Identify the definition of specific activity.
- 1.06.13 Identify the definition of half-life.

**Course Title:** Radiological Control Technician  
**Module Title:** Interaction of Radiation with Matter  
**Module Number:** 1.07

**Objectives:**

- 1.07.01 Identify the definitions of the following terms:
  - a. ionization
  - b. excitation
  - c. bremsstrahlung
- 1.07.02 Identify the definitions of the following terms:
  - a. specific ionization
  - b. linear energy transfer (LET)
  - c. stopping power
  - d. range
  - e. W-value
- 1.07.03 Identify the two major mechanisms of energy transfer for alpha particulate radiation.
- 1.07.04 Identify the three major mechanisms of energy transfer for beta particulate radiation.
- 1.07.05 Identify the three major mechanisms by which gamma photon radiation interacts with matter.
- 1.07.06 Identify the four main categories of neutrons as they are classified by kinetic energy for interaction in tissue.
- 1.07.07 Identify three possible results of neutron capture for slow neutrons.
- 1.07.08 Identify elastic and inelastic scattering interactions for fast neutrons.
- 1.07.09 Identify the characteristics of materials best suited to shield:
  - a. alpha
  - b. beta
  - c. gamma
  - d. neutron radiations

**Course Title:** Radiological Control Technician  
**Module Title:** Biological Effects of Radiation  
**Module Number:** 1.08

**Objectives:**

- 1.08.01 Identify the function of the following cell structures:
  - a. Cell membrane
  - b. Cytoplasm
  - c. Mitochondria
  - d. Lysosome
  - e. Nucleus
  - f. DNA
  - g. Chromosomes
- 1.08.02 Identify effects of radiation on cell structures.
- 1.08.03 Define the law of Bergonie and Tribondeau.
- 1.08.04 Identify factors which affect the radiosensitivity of cells.
- 1.08.05 Given a list of types of cells, identify which are most or least radiosensitive.
- 1.08.06 Identify primary and secondary reactions on cells produced by ionizing radiation.
- 1.08.07 Identify the following definitions and give examples of each:
  - a. Stochastic effect
  - b. Deterministic effect
- 1.08.08 Identify the LD 50/30 value for humans.
- 1.08.09 Identify the possible somatic effects of chronic exposure to radiation.
- 1.08.10 Distinguish between the three types of the acute radiation syndrome, and identify the exposure levels and the symptoms associated with each.
- 1.08.11 Identify risks of radiation exposure to the developing embryo and fetus.
- 1.08.12 Distinguish between the terms "somatic" and "heritable" as they apply to biological effects.

**Course Title:** Radiological Control Technician  
**Module Title:** Radiological Protection Standards  
**Module Number:** 1.09

**Objectives:**

- 1.09.01 Identify the role of advisory agencies in the development of recommendations for radiological control.
- 1.09.02 Identify the role of regulatory agencies in the development of standards and regulations for radiological control.
- 1.09.03 Identify the scope of 10 CFR Part 835.

**References:**

- 1. ANL-88-26 (1988) "Operational Health Physics Training"; Moe, Harold; Argonne National Laboratory, Chicago.
- 2. U.S. Department of Energy, DOE-STD-1098-2008, "Radiological Control Standard".
- 3. 10 CFR Part 835 (2007) "Occupational Radiation Protection".

---

**Course Title:** Radiological Control Technician  
**Module Title:** ALARA  
**Module Number:** 1.10

**Objectives:**

- 1.10.01 Describe the assumptions on which the current ALARA philosophy is based.
- 1.10.02 Identify the ALARA philosophy for collective personnel exposure and individual exposure.
- 1.10.03 Identify the scope of an effective radiological ALARA program.
- 1.10.04 Identify the purposes for conducting pre-job and/or post-job ALARA reviews.
- 1.10.05 Identify RCT responsibilities for ALARA implementation.

**INTRODUCTION**

All personnel at a facility must be committed to the ALARA philosophy. The RCT can play a major role in establishing and maintaining that commitment by understanding its concepts. This lesson will familiarize the student with the ALARA concepts and the essential components of an effective ALARA program.

**References:**

1. NCRP Report No. 91 (1987) "Recommendations on Limits for Exposure to Ionizing Radiation".
2. U.S. Department of Energy, DOE-STD-1098-2008, "Radiological Control Standard".
3. 10 CFR Part 835 (2007), "Occupational Radiation Protection".
4. ICRP Publication 37 "Cost-Benefit Analysis in the Optimization of Radiation Protection".

---

**Course Title:** Radiological Control Technician  
**Module Title:** External Exposure Control  
**Module Number:** 1.11

**Objectives :**

- 1.11.01 Identify the four basic methods for minimizing personnel external exposure.
- 1.11.02 Using the Exposure Rate = 6CEN equation, calculate the gamma exposure rate for specific radionuclides.
- 1.11.03 Identify "source reduction" techniques for minimizing personnel external exposures.
- 1.11.04 Identify "time-saving" techniques for minimizing personnel external exposures.
- 1.11.05 Using the stay time equation, calculate an individual's remaining allowable equivalent dose or stay time.
- 1.11.06 Identify "distance to radiation sources" techniques for minimizing personnel external exposures.
- 1.11.07 Using the point source equation (inverse square law), calculate the exposure rate or distance for a point source of radiation.
- 1.11.08 Using the line source equation, calculate the exposure rate or distance for a line source of radiation.
- 1.11.09 Identify how exposure rate varies depending on the distance from a surface (plane) source of radiation, and identify examples of plane sources.
- 1.11.10 Identify the definition and units of "mass attenuation coefficient" and "linear attenuation coefficient".
- 1.11.11 Identify the definition and units of "density thickness."
- 1.11.12 Identify the density-thickness values, in  $\text{mg}/\text{cm}^2$ , for the skin, the lens of the eye and the whole body.
- 1.11.13 Calculate shielding thickness or exposure rates for gamma/x-ray radiation using the equations.

**Course Title:** Radiological Control Technician

**Module Title:** Internal Exposure Control

**Module Number:** 1.12

**Objectives :**

- 1.12.01 Identify four ways in which radioactive materials can enter the body.
- 1.12.02 Given a pathway for radioactive materials into the body, identify one method to prevent or minimize entry by that pathway.
- 1.12.03 Identify the definition and distinguish between the terms "Annual Limit on Intake" (ALI) and "Derived Air Concentration" (DAC).
- 1.12.04 Identify the basis for determining Annual Limit on Intake (ALI).
- 1.12.05 Identify the definition of "reference man".
- 1.12.06 Identify a method of using DACs to minimize internal exposure potential.
- 1.12.07 Identify three factors that govern the behavior of radioactive materials in the body.
- 1.12.08 Identify the two natural mechanisms which reduce the quantity of a radionuclide in the body.
- 1.12.09 Identify the relationship between the physical, biological and effective half lives.
- 1.12.10 Given the physical and biological half lives, calculate the effective half life.
- 1.12.11 Given a method used by medical personnel to increase the elimination rate of radioactive materials from the body, identify how and why that method works.

**Course Title:** Radiological Control Technician  
**Module Title:** Radiation Detector Theory  
**Module Number:** 1.13

**Objectives:**

- 1.13.01 Identify the three fundamental laws associated with electrical charges.
- 1.13.02 Identify the definition of current, voltage and resistance and their respective units.
- 1.13.03 Select the function of the detector and readout circuitry components in a radiation measurement system.
- 1.13.04 Identify the parameters that affect the number of ion pairs collected in a gas filled detector.
- 1.13.05 Given a graph of the gas amplification curve, identify the regions of the curve.
- 1.13.06 Identify the characteristics of a detector operated in each of the useful regions of the gas amplification curve.
- 1.13.07 Identify the definition of the following terms:
  - a. Resolving time
  - b. Dead time
  - c. Recovery time
- 1.13.08 Identify the methods employed with gas-filled detectors to discriminate between various types of radiation and various radiation energies.
- 1.13.09 Identify how a scintillation detector and associated components operate to detect and measure radiation.
- 1.13.10 Identify how neutron detectors detect neutrons and provide an electrical signal.
- 1.13.11 Identify the principles of detection, advantages and disadvantages of a GeLi detector and an HPGe detector.

**INTRODUCTION**

In all aspects of radiological control, a knowledge of the characteristic and magnitude of the radiation field is essential in evaluating the degree of radiological hazard present. Radiation itself can not be detected directly. Because of this, radiation detection is

accomplished by analysis of the effects produced by the radiation as it interacts in a material. Numerous different methods of accomplishing this analysis have been developed

**Course Title:** Radiological Control Technician  
**Module Title:** Radiological Documentation  
**Module Number:** 2.01

Note: See attached SAT Checklist for course objectives on pg. 244

**Objectives:**

- 2.01.01 List the types of records/reports that the Radiological Control group is responsible for maintaining at your site.
- 2.01.02 Describe the types of records and reports used at your site by the Radiological Control Group, to include but should not be limited to:
  - a. Radiological Work Permits
  - b. Survey Reports
  - c. Analysis Reports
  - d. Radiological Deficiency Reports
  - e. ALARA Documentation
  - f. Exposure Reports
- 2.01.03 Explain the requirements for the records management system, such as QC, auditability/retrievability, management information at your site.

## INTRODUCTION

10 CFR 835 establishes radiation protection standards, limits, and program requirements for protecting individuals from ionizing radiation resulting from the conduct of DOE activities. It is important to maintain the proper documentation to ensure that these standards and requirements are being met. An RCT plays a vital role in supporting these requirements through proper documentation.

## PURPOSE AND REQUIREMENTS

Radiological control records are needed to demonstrate the effectiveness of the overall Radiation Protection program at DOE facilities. The records are used to document radiological safety afforded to personnel on-site. Radiological control records become valuable tools in work planning, evaluating past trends, and guiding future performance goals. These records may become the basis for public disclosures, legal proceedings, medical assessment and audits to show compliance with company, state or federal requirements. Because of this, it is important that these records be of high quality, readily retrievable, and managed for the prescribed retention period. It is suggested that these records be cross-referenced, when applicable, to aid in their retrieval.

**Course Title:** Radiological Control Technician  
**Module Title:** Communication Systems  
**Module Number:** 2.02

**Objectives :**

- 2.02.01 Explain the importance of good communication.
- 2.02.02 Identify two methods of communication and be able to determine different types of each.
- 2.02.03 Describe different types of communication systems.
- 2.02.04 Describe the FCC and DOE guidelines regarding proper use of communication systems.
- 2.02.05 Describe general attributes of good communications.
- 2.02.06 Explain the importance of knowing how to contact key personnel.
- ~~2.02.07 Identify the communication systems available at your site and methods available to contact key personnel.~~
- ~~2.02.08 Describe the emergency communication systems available at your site.~~

**References:**

*(Add any site-specific references.)*

2.02.01	Explain the importance of good communication.c. Energy
---------	--

**IMPORTANCE OF COMMUNICATION**

Good communication is important in everyday life to make sure our message is clear, understood, and received. A clear concise communication eliminates confusion and the possibility of misunderstanding. It is important that the receiver understand the communication without unnecessary interpretation or guess work. For a communication to be completed there must be a receiver. The receiver is the person or group that the communication is intended. For a good communication process there must be a clear concise message, a medium of transmission (i.e. telephone, telegraph, E-mail, letter, signal flag, etc.), and a receiver. If a response is required by the receiver, this can serve as confirmation of reception of the communication, however, a response alone does not indicate the communication was understood correctly. Misunderstanding of

**Course Title:** Radiological Control Technician  
**Module Title:** Counting Errors and Statistics  
**Module Number:** 2.03

**Objectives:**

(This document, Study Material, is referred to as Study Guide in the Program Management Guide)

- 2.03.01. Identify five general types of errors that can occur when analyzing radioactive samples, and describe the effect of each source of error on sample measurements.
- 2.03.02. State two applications of counting statistics in sample analysis.
- 2.03.03. Define the following terms:
  - a. mode
  - b. median
  - c. mean
- 2.03.04. Given a series of data, determine the mode, median, or mean.
- 2.03.05. Define the following terms:
  - a. variance
  - b. standard deviation
- 2.03.06. Given the formula and a set of data, calculate the standard deviation.
- 2.03.07. State the purpose of a Chi-squared test.
- 2.03.08. ~~State the criteria for acceptable Chi-squared values at your site.~~
- 2.03.09. State the purpose of creating quality control (QC) charts.
- 2.03.10. ~~State the requirements for maintenance and review of QC charts at your site.~~
- 2.03.11. State the purpose of calculating warning and control limits.
- 2.03.12. State the purpose of determining efficiencies and correction factors.
- 2.03.13. Given counting data and source assay information, calculate efficiencies and correction factors.

DOE-HDBK-1122-2009 (Revised 2013)

Module 2.03 Counting Errors and Statistics

Student's Material

---

- 2.03.14. State the meaning of counting data reported as  $x \pm y$ .
- 2.03.15. Given counting results and appropriate formulas, report results to desired confidence level.
- 2.03.16. State the purpose of determining background.
- 2.03.17. ~~State the method and requirements for determining background for counting systems at your site.~~
- 2.03.18. State the purpose of performing sample planchet maintenance.
- 2.03.19. ~~State the method and requirements for performing planchet maintenance for counting systems at your site.~~
- 2.03.20. Explain methods to improve the statistical validity of sample measurements.
- 2.03.21. Define "detection limit," and explain the purpose of using detection limits in the analysis of radioactive samples.
- 2.03.22. ~~Given the formula and necessary information, calculate detection limit values for counting systems at your site.~~
- 2.03.23. State the purpose and method of determining crosstalk.
- 2.03.24. ~~State the criteria for acceptable values of crosstalk for counting systems at your site.~~
- 2.03.25. State the purpose of performing a voltage plateau.
- 2.03.26. ~~State the method of performing a voltage plateau on counting systems at your site.~~

**Course Title:** Radiological Control Technician  
**Module Title:** Dosimetry  
**Module Number:** 2.04

**Objectives:**

- 2.04.01 Identify the DOE external exposure limits for general employees.
- 2.04.02 Identify the DOE limits established for the embryo/fetus of a declared pregnant female general employee.
- 2.04.03 Identify the administrative exposure control guidelines at your site, including those for the:
  - a. General employee
  - b. Member of the public/minor
  - c. Incidents and emergencies
  - d. Embryo/fetus
- 2.04.04 Identify the requirements for a female general employee who has notified her employer in writing that she is pregnant.
- 2.04.05 Determine the theory of operation of a thermoluminescent dosimeter (TLD).
- 2.04.06 Determine how a TLD reader measures the radiation dose from a TLD.
- 2.04.07 Identify the advantages and disadvantages of a TLD compared to a film badge.
- 2.04.08 ~~Identify the types of beta-gamma TLDs used at your site.~~
- 2.04.09 ~~Identify the types of neutron TLDs used at your site.~~
- 2.04.10 ~~Determine the requirements for use of TLDs used at your site.~~
- 2.04.11 ~~Determine the principle of operation, and the types used, for the personnel neutron dosimeters used at your site.~~
- 2.04.12 ~~Determine the principle of operation of self-reading dosimetry (SRD) used at your site.~~
- 2.04.13 ~~Determine the principle of operation, and guidelines for use, for the alarming dosimeters used at your site.~~
- 2.04.14 ~~List the types of bioassay monitoring methods at your site.~~

**Course Title:** Radiological Control Technician  
**Module Title:** Contamination Control  
**Module Number:** 2.05

**Objectives:**

- 2.05.01 Define the terms "removable and fixed surface contamination," state the difference between them and list common methods used to measure each.
- 2.05.02 State the components of a radiological monitoring program for contamination control and common methods used to accomplish them.
- 2.05.03 State the basic goal of a contamination control program and list actions that contribute to its success.
- 2.05.04 State the basic principles of contamination control and list examples of implementation methods.
- 2.05.05 List and describe the possible engineering control methods used for contamination control.
- 2.05.06 State the purpose of using protective clothing in contamination areas.
- 2.05.07 List the basic factors which determine protective clothing requirements for personnel protection.

**INTRODUCTION**

Contamination control is probably one of the most difficult and challenging tasks the Radiological Control Technician will encounter. To have a successful contamination control program, the radiological control staff must have considerable foresight, initiative, and experience.

**References:**

1. DOE Radiological Control Standard, Articles 325, 337 and 338 (2008).
2. "The Health Physics and Radiological Health Handbook," Shleien; 1992.

**Course Title:** Radiological Control Technician  
**Module Title:** Air Sampling Program/Methods  
**Module Number:** 2.06

**Objectives:**

- 2.06.01 State the primary objectives of an air monitoring program.
- 2.06.02 Describe the three physical states of airborne radioactive contaminants.
- 2.06.03 List and describe the primary considerations to ensure a representative air sample is obtained.
- 2.06.04 Define the term "isokinetic sampling" as associated with airborne radioactivity sampling.
- 2.06.05 Identify the six general methods for obtaining samples or measurements of airborne radioactivity concentrations and describe the principle of operation for each method.
  - a. Filtration
  - b. Volumetric
  - c. Impaction/impingement
  - d. Adsorption
  - e. Condensation/dehumidification
  - f. In-line/flow-through detection
- 2.06.06 Describe the general considerations for selection of an air monitoring method.
- 2.06.07 State the purpose of the five primary types of airborne radioactivity samplers/monitors:
  - a. Personal air samplers (breathing zone)
  - b. High volume/flow rate air samplers
  - c. Low volume/flow rate air samplers
  - d. Portable continuous air monitors
  - e. Installed continuous air monitoring systems
- 2.06.08 List the factors that affect the accuracy of airborne radioactivity measurements and describe how these factors affect sample accuracy.
- 2.06.09 ~~Describe the site air monitoring program that includes monitoring frequencies, calculational methods, applicable derived air concentration limits, and methods for determining radon interference.~~

**Course Title:** Radiological Control Technician  
**Module Title:** Respiratory Protection  
**Module Number:** 2.07

**Objectives:**

- 2.07.01 Explain the purpose of respiratory protection standards and regulations.
- 2.07.02 Identify the OSHA, ANSI, and DOE respiratory protection program requirements.
- 2.07.03 Identify the standards which regulate respiratory protection.
- 2.07.04 Describe the advantages and disadvantages (limitations) of each of the following respirators:
  - a. Air purifying, particulate removing filter respirators
  - b. Air purifying, Chemical Cartridge and Canister respirators for Gases and Vapors
  - c. Full-face, supplied-air respirators
  - d. Self-contained breathing apparatus (SCBA)
  - e. Combination atmosphere supplying respirators
- 2.07.05 Define the term protection factor (PF).
- 2.07.06 State the difference between a qualitative and quantitative fit test.
- 2.07.07 State the recommended physical functions the subject must perform during a respirator fit test.
- 2.07.08 State how the term protection factor (PF) is applied to the selection of respiratory protection equipment.
- 2.07.09 State the general considerations and considerations for the nature of the hazard when selecting the proper respiratory protection equipment.
- 2.07.10 ~~Identify the types of respiratory equipment available for use at your site.~~
- 2.07.11 Identify the quality specification breathing air must meet.

**References:**

**Course Title:** Radiological Control Technician  
**Module Title:** Radioactive Source Control  
**Module Number:** 2.08

**Objectives:**

- 2.08.01 Describe the requirements for radioactive sources per 10 CFR 835.
- ⇒ 2.08.02 ~~Identify the characteristics of radioactive sources that must be controlled at your site.~~
- ⇒ 2.08.03 ~~Identify the packaging, marking, and labeling requirements for radioactive sources.~~
- ⇒ 2.08.04 ~~Describe the approval and posting requirements for radioactive materials areas.~~
- ⇒ 2.08.05 ~~Describe the process and procedures used at your site for storage and accountability of radioactive sources.~~

**Course Title:** Radiological Control Technician  
**Module Title:** Environmental Monitoring  
**Module Number:** 2.09

**Objectives:**

- 2.09.01 State the goals of an environmental monitoring program.
- 2.09.02 State the exposure limits to the general public as they apply to environmental monitoring.
- 2.09.03 Define the term "critical nuclide."
- 2.09.04 Define the term "critical pathway."
- 2.09.05 ~~State locations frequently surveyed for radiological contamination at outdoor waste sites associated with your site and the reasons for each.~~
- 2.09.06 Define the term "suspect waste site," and how they can be identified.
- 2.09.07 ~~Describe the methods used for environmental monitoring at your site.~~

**INTRODUCTION**

Environmental monitoring plays a large role in the field of radiological control. Environmental monitoring is used to estimate human population doses, determine the impact a site has on the environment, monitor for unplanned releases as well as quantifying planned releases, and gives us data useful in determining pathway data. This data can then be analyzed, and such information as critical nuclides and critical pathways can then be determined. The Radiological Control organization is generally interested in determining activity in the ambient air, in surface water and sediments, in ground water wells, as well as ambient dose rates in the environment.

Another aspect of environmental monitoring that concerns all employees is the identification of suspect waste sites. When a waste site is suspected, it is the responsibility of the employee to report the site to the proper site authorities for restoration and remediation efforts.

**Course Title:** Radiological Control Technician  
**Module Title:** Access Control and Work Area Setup  
**Module Number:** 2.10

**Objectives:**

- 2.10.01 State the purpose of and information found on a Radiological Work Permit (RWP) including the different classifications at your site.
- 2.10.02 State responsibilities in using or initiating a RWP.
- 2.10.03 State the document that governs the ALARA program at your site.
- 2.10.04 Describe how exposure/performance goals are established at your site.
- 2.10.05 State the conditions under which a pre-job ALARA review is required at your site.
- 2.10.06 State the conditions under which a post-job ALARA review is required at your site.
- 2.10.07 State purpose of radiological postings, signs, labels, and barricades; and the RCTs responsibilities for them.
- 2.10.08 Identify the following radiological postings at your site, requirements for posting/barriers, and requirements for entry:
  - a. Radiological Buffer Area
  - b. Radiation Area
  - c. High Radiation Area
  - d. Very High Radiation Area
  - e. Hot Spot
  - f. Contamination Area
  - g. High Contamination Area
  - h. Airborne Radioactivity Area
  - i. Fixed Surface Contamination
  - j. Soil Contamination
  - k. Radioactive Material Area
  - l. Underground Radioactive Material Area
- 2.10.09 Describe good practices, support equipment to use, and common discrepancies in setting up radiological areas.
- 2.10.10 List discrepancies frequently observed in containment devices.

- 2.10.11 Describe good practices in setting up portable ventilation systems and count rate meters.
- 2.10.12 List the requirements individuals should follow while working in RBAs.
- 2.10.13 State the requirements for removing or releasing materials from any radiological area.

## **INTRODUCTION**

This lesson reviews Radiological Work Permits, various types of postings used in radiological areas, setting up radiological areas, access controls, and releasing of material from radiological areas.

### **References:**

1. 10 CFR 835 (2007), "Occupational Radiation Protection".
2. DOE Radiological Control Standard (2008).

**Course Title:** Radiological Control Technician  
**Module Title:** Radiological Work Coverage  
**Module Number:** 2.11

**Objectives:**

- 2.11.01 List four purposes of job coverage.
- 2.11.02 Explain the differences between continuous and intermittent job coverage.
- 2.11.03 Given example conditions, identify those that should require job coverage.
- 2.11.04 Identify items that should be considered in planning job coverage.
- 2.11.05 Identify examples of information that should be discussed with workers during pre-job briefings.
- 2.11.06 Describe exposure control techniques that can be used to control worker and technician radiation exposures.
- 2.11.07 ~~Describe the in-progress radiological surveys that should be performed, at your site, under various radiological conditions.~~
- 2.11.08 ~~Describe site requirements for documentation of in-progress radiological surveys.~~
- 2.11.09 ~~Explain actions that should be taken if surveys show radiological conditions significantly different from that expected.~~
- 2.11.10 Describe contamination control techniques that can be used to limit or prevent personnel and area contamination and/or reduce radioactive waste generation.
- 2.11.11 Describe job coverage techniques that can be used to prevent or limit the spread of airborne radioactive material.
- 2.11.12 Describe overall job control techniques in maintaining control of radiological work.
- 2.11.13 State the reasons to stop radiological work activities in accordance with the DOE RCS.

**Course Title:** Radiological Control Technician  
**Module Title:** Shipment/Receipt of Radioactive Material  
**Module Number:** 2.12

**Objectives:**

- 2.12.01 List the applicable agencies which have regulations that govern the transport of radioactive material.
- 2.12.02 Define terms used in DOT regulations.
- 2.12.03 Describe methods that may be used to determine the radionuclide contents of a package.
- 2.12.04 Describe the necessary radiation and contamination surveys to be performed on packages and state the applicable limits.
- 2.12.05 Describe the necessary radiation and contamination surveys to be performed on exclusive use vehicles and state the applicable limits.
- 2.12.06 Identify the proper placement of placards on a transport vehicle.
- 2.12.07 ~~Identify inspection criteria that should be checked prior to releasing a shipment at your site.~~
- 2.12.08 ~~Describe site procedures for receipt and shipment of radioactive material shipments.~~
- 2.12.09 ~~List the actions required at your site if a shipment is received exceeding radiation or contamination limits.~~
- 2.12.10 ~~Describe the proper step-by-step method for opening a package containing radioactive material at your site.~~

**REFERENCES:**

1. 10 CFR 835 (2007), "Occupational Radiation Protection".
2. 49 CFR, Parts 100-177, "Transportation".
3. DOE Order 460.1B (2003), "Packaging and Transportation Safety".
4. DOE Order 460.2 A (2004), "Departmental Materials Transportation and Packaging Management."

**Course Title:** Radiological Control Technician  
**Module Title:** Radiological Incidents and Emergencies  
**Module Number:** 2.13

**Objectives:**

- 2.13.01 Describe the general response and responsibilities of an RCT during any incident.
- 2.13.02 ~~Identify any emergency equipment and facilities that are available, including the location and contents of emergency equipment kits.~~
- 2.13.03 ~~Describe the RCT response to a Continuous Air Monitor (CAM) alarm.~~
- 2.13.04 ~~Describe the RCT response to a personnel contamination monitor alarm.~~
- 2.13.05 ~~Describe the RCT response to off scale or lost dosimetry.~~
- 2.13.06 ~~Describe the RCT response to rapidly increasing, unanticipated radiation levels or an area radiation monitor alarm.~~
- 2.13.07 ~~Describe the RCT response to a dry or liquid radioactive material spill.~~
- 2.13.08 ~~Describe the RCT response to a fire in a radiological area or involving radioactive materials.~~
- 2.13.09 ~~Describe the RCT response to other specific site incidents (as applicable).~~
- 2.13.10 ~~Describe the response levels associated with radiological emergencies.~~
- 2.13.11 ~~Describe site specific procedures for documenting radiological incidents.~~
- 2.13.12 ~~Identify the structure of the emergency response organization at your site.~~
- 2.13.13 ~~Identify the available offsite incident support groups and explain the assistance that each group can provide.~~

- 2.13.14 ~~Discuss radiological incidents at the plant or other plants, including cause, prevention, and recommended incident response.~~

## INTRODUCTION

Many people believe "it can't happen here" or "it won't happen to me" and do not take incident response planning seriously. But, incidents do occur, and experience has shown that the best response comes from workers who have prepared themselves with a plan for dealing with incidents. Each incident may be unique and no plan can be expected to give an exact solution to every problem, but a step-by-step approach for responding to a problem will help assure an appropriate response.

## REFERENCES:

1. 10 CFR 835 (2007), "Occupational Radiation Protection".
2. DOE Order 151.1C (2005), "Comprehensive Emergency Management Systems".
3. Site-specific emergency preparedness manuals.

***NOTE: This study guide should be developed using site specific information and regulatory documents. The following is a recommended format of material.***

## RADIOLOGICAL INCIDENTS AND EMERGENCIES

A radiological incident is an unplanned event involving radiation or radioactive materials (part of an emergency). The response taken to an incident is usually governed by normal procedures.

Emergencies are classified as either an Alert, Site Area Emergency, or General Emergency, in order of increasing severity, when events occur that represent a specific threat to workers and the public due to the release or potential release of significant quantities of radiological and non-radiological hazardous materials. Classification aids in the rapid communication of critical information and the initiation of appropriate time-urgent emergency response actions.

Operational Emergencies are major unplanned or abnormal events or conditions that: involve or affect DOE/NNSA facilities and activities by causing or having the potential to cause serious health and safety or environmental impacts; require resources from outside the immediate/affected area or local event scene to supplement the initial response; and, require time-urgent notifications to initiate response activities at locations beyond the event scene. In general, to be considered an Operational Emergency, an event or condition involving the uncontrolled release of a hazardous material must: immediately threaten or

**Course Title:** Radiological Control Technician  
**Module Title:** Personnel Decontamination  
**Module Number:** 2.14

**Objectives:**

- 2.14.01 List the three factors which determine the actions taken in decontamination of personnel.
- 2.14.02 ~~List the preliminary actions and notifications required by the RCT for an individual suspected to be contaminated.~~
- 2.14.03 ~~List the actions to be taken by the RCT when contamination of clothing is confirmed.~~
- 2.14.04 ~~List the actions to be taken by the RCT when skin contamination is confirmed.~~
- 2.14.05 ~~List the steps for using decontamination reagents to decontaminate personnel.~~

**INTRODUCTION**

In our work environment, one of the major concerns of radiological control is the prevention of personnel contamination. When personnel contamination has been identified, it is the responsibility of the RCTs to perform or oversee the decontamination of the individual using the best methods available. Frequently, the RCT is also required to document the decontamination effort and make any required notifications. This lesson will address the methods used to detect personnel contamination. In addition, it will address the factors which determine decontamination actions, the responsibilities of the RCTs and the approved methods for decontamination of personnel.

**References:**

*(Insert site specific references.)*

**Course Title:** Radiological Control Technician  
**Module Title:** Radiological Considerations for First Aid  
**Module Number:** 2.15

**Objectives:**

- 2.15.01 List the proper steps for the treatment of minor injuries occurring in various radiological areas.
- 2.15.02 List the requirements for responding to major injuries or illnesses in radiological areas.
- 2.15.03 State the RCT's responsibility at the scene of a major injury in a radiological area after medical personnel have arrived at the scene.
- 2.15.04 ~~List the requirements for treatment and transport of contaminated injured personnel at your facility.~~

**INTRODUCTION**

"Standard first aid is applied prior to contamination control whenever it is considered to have life-saving value, or is important to the patient for relief of pain or prevention of disability. It is the obligation of all who assist a patient to render such aid within the limits of their training and qualifications."

**References:**

1. "Basic Radiation Protection Technology"; Gollnick, Daniel; 5<sup>th</sup> ed.; Pacific Radiation Corporation; 2008.
2. "Operational Health Physics Training" - H. J. Moe.

**Course Title:** Radiological Control Technician  
**Module Title:** Radiation Survey Instrumentation  
**Module Number:** 2.16

**Objectives:**

- 2.16.01 List the factors which affect an RCT's selection of a portable radiation survey instrument, and identify appropriate instruments for external radiation surveys.
- 2.16.02 ~~Identify the following features and specifications for ion chamber instruments used at your facility:~~
- a. ~~Detector type~~
  - b. ~~Instrument operating range~~
  - c. ~~Detector shielding~~
  - d. ~~Detector window~~
  - e. ~~Types of radiation detected/measured~~
  - f. ~~Operator adjustable controls~~
  - g. ~~Markings for detector effective center~~
  - h. ~~Specific limitations/characteristics~~
- 2.16.03 ~~Identify the following features and specifications for high range instruments used at your facility:~~
- a. ~~Detector type~~
  - b. ~~Instrument operating range~~
  - c. ~~Detector shielding~~
  - d. ~~Detector window~~
  - e. ~~Types of radiation detected/measured~~
  - f. ~~Operator adjustable controls~~
  - g. ~~Markings for detector effective center~~
  - h. ~~Specific limitations/characteristics~~
- 2.16.04 ~~Identify the following features and specifications for neutron detection and measurement instruments used at your facility:~~
- a. ~~Detector type~~
  - b. ~~Instrument operating range~~
  - c. ~~Types of radiation detected/measured~~
  - d. ~~Energy response~~
  - e. ~~Operator adjustable controls~~
  - f. ~~Specific limitations/characteristics~~

**Course Title:** Radiological Control Technician  
**Module Title:** Contamination Monitoring Instrumentation  
**Module Number:** 2.17

**Objectives:**

- 2.17.01 List the factors which affects an RCT's selection of a portable contamination monitoring instrument.
- 2.17.02 ~~Describe the following features and specifications for commonly used count rate meter probes used at your site for beta/gamma and/or alpha surveys:~~
- ~~a. Detector type~~
  - ~~b. Detector shielding and window~~
  - ~~c. Types of radiation detected/measured~~
  - ~~d. Energy response for measured radiation~~
  - ~~e. Specific limitations/characteristics.~~
- 2.17.03 ~~Describe the following features and specifications for commonly used count rate instruments used at your site.~~
- ~~a. Types of detectors available for use~~
  - ~~b. Operator adjustable controls~~
  - ~~c. Specific limitations/characteristics.~~
- 2.17.04 ~~Describe the following features and specifications for commonly used personnel contamination monitors at your site.~~
- ~~a. Detector type~~
  - ~~b. Detector shielding and housing~~
  - ~~c. Types of radiation detected/measured~~
  - ~~d. Scaler type uses~~
  - ~~e. Scaler operator adjustable controls~~
  - ~~f. Specific procedures for source checks~~
  - ~~g. Specific procedures for sample counts.~~
- 2.17.05 ~~Describe the following features and specifications for commonly used contamination monitors used at your site (tool, bag, laundry monitors).~~
- ~~a. Detector type~~
  - ~~b. Detector shielding and window~~
  - ~~c. Types of radiation detected/measured~~
  - ~~d. Energy response for measured radiation~~
  - ~~e. Specific limitations/characteristics.~~

**Course Title:** Radiological Control Technician  
**Module Title:** Air Sampling Equipment  
**Module Number:** 2.18

**Objectives:**

- 2.18.01 Identify the factors that affect the operator's selection of a portable air sampler.
- 2.18.02 ~~Identify the physical and operating characteristics and the limitation(s) of the Staplex and Radeco portable air samplers.~~
- 2.18.03 ~~Identify the physical and operating characteristics and the limitation(s) of Motor air pumps.~~
- 2.18.04 ~~List the steps for a preoperational checkout of a portable air sampler.~~
- 2.18.05 ~~Identify the physical and operational characteristics and the limitation(s) of beta-gamma constant air monitors (CAMs).~~
- 2.18.06 ~~Identify the physical and operating characteristics and the limitation(s) of alpha constant air monitors (CAMs).~~

**INTRODUCTION**

This lesson covers air sampling equipment in relation to types used, operational and physical characteristics, limitations, and methods of sampling. The RCT uses this information to identify and assess the hazards presented by airborne contamination and establish protective requirements for work performed in airborne contamination areas.

**References:**

1. "Basic Radiation Protection Technology"; Gollnick, Daniel; 5<sup>th</sup> ed.; Pacific Radiation Corporation; 2008.
2. Operational Health Physics, Harold J. Moe.
3. ANSI N323A.
4. (Various Manufacturer Technical Manuals.)

**Course Title:** Radiological Control Technician  
**Module Title:** Counting Room Equipment  
**Module Number:** 2.19

**Objectives:**

- 2.19.01 ~~Describe the features and specifications for commonly used laboratory counters or scalers:~~
  - a. ~~Detector type~~
  - b. ~~Detector shielding~~
  - c. ~~Detector window~~
  - d. ~~Types of radiation detected and measured~~
  - e. ~~Operator adjustable controls~~
  - f. ~~Source check~~
  - g. ~~Procedure for sample counting~~
  
- 2.19.02 ~~Describe the features and specifications for low-background automatic counting systems:~~
  - a. ~~Detector type~~
  - b. ~~Detector shielding~~
  - c. ~~Detector window~~
  - d. ~~Types of radiation detected and measured~~
  - e. ~~Operator adjustable controls~~
  - f. ~~Source check~~
  - g. ~~Procedure for sample counting~~
  
- 2.19.03 ~~Describe the following features and specifications for commonly used gamma spectroscopy systems:~~
  - a. ~~Detector type~~
  - b. ~~Detector shielding~~
  - c. ~~Detector window~~
  - d. ~~Types of radiation measured~~
  - e. ~~Procedures~~

## INTRODUCTION

An overview of counters, scalers and associated equipment will describe the basic functions of counting equipment used to detect radiation activity. The RCT uses information from these counting instruments to identify and assess the hazards presented by contamination and airborne radioactivity and establish protective requirements for work performed in radiological areas. Stand-alone counters or scalers measure gross activity while spectroscopy systems perform spectrum analysis to identify and quantify activity from specific nuclides. The common uses of counting room equipment in various facilities will be discussed.

**Organization Name**

RP-PROG

**Course Title**

Use of Anti-C PPE

**Course Number**

50436

**Revision Number**

3.0

Developer	<u>Justin Gillilan</u> Developer Name ( <i>print</i> )	<u>Justin Gillilan</u> Signature	<u>02/01/22</u> Date
Subject Matter Review	<u>Matthew Hill</u> Subject Matter Expert ( <i>print</i> )	<u>MATTHEW HILL (Affiliate)</u> Signature	<u>02/01/2022</u> Date
Approval	<u>Keith Luna</u> FOD/Programmatic Representative ( <i>print</i> )	<u>KEITH LUNA (Affiliate)</u> Signature	<u>02/01/2022</u> Date

This document does not contain scientific or technical information  
DUSA Designator: RADPRO

## Systematic Approach to Training Checklist

Course Title: Use of Anti-C PPE		
Course Number: 50436	Revision # 3.0	Date 01/28/2022
Developer: Justin Gillilan		
Requester of Training: RP-PROG		
Description of Training Request: Initial Training for Radiological Control Technicians (RCTs) designed to meet the practical training requirements of DOE-HDBK-1122-2009		
Target Audience Analysis: Individuals enrolled in 116 curricula requiring initial training credit		

Analysis	
Course Drivers:	
<input checked="" type="checkbox"/> Federal or Other Regulations <input type="checkbox"/> DOE Directives <input type="checkbox"/> Consensus Standards (i.e. ANSI, ASTM) LANL Requirements: <input type="checkbox"/> Policy/Procedure Change <input type="checkbox"/> Notices <input type="checkbox"/> Corrective Action Plan <input type="checkbox"/> Qualification Standard <input type="checkbox"/> Other (specify)	<p>Title: 10 CFR 835 - <i>OCCUPATIONAL RADIATION PROTECTION</i></p> <p>Specific Citation: §835.901 (a), (c) Radiation safety training</p> <p>(a) Each individual shall complete radiation safety training on the topics established at §835.901(c) commensurate with the hazards in the area and the required controls:</p> <p>(c) Radiation safety training shall include the following topics, to the extent appropriate to each individual's prior training, work assignments, and degree of exposure to potential radiological hazards:</p> <ol style="list-style-type: none"><li>(1) Risks of exposure to radiation and radioactive materials, including prenatal radiation exposure;</li><li>(2) Basic radiological fundamentals and radiation protection concepts;</li><li>(3) Physical design features, administrative controls, limits, policies, procedures, alarms, and other measures implemented at the facility to manage doses and maintain doses ALARA, including both routine and emergency actions</li><li>(4) Individual rights and responsibilities as related to implementation of the facility radiation protection program;</li><li>(5) Individual responsibilities for implementing ALARA measures required by §835.101; and</li><li>(6) Individual exposure reports that may be requested in accordance with §835.801.</li></ol>

<input type="checkbox"/> Federal or Other Regulations <input type="checkbox"/> DOE Directives <input type="checkbox"/> Consensus Standards (i.e. ANSI, ASTM) LANL Requirements: <input type="checkbox"/> Policy/Procedure Change <input type="checkbox"/> Notices <input type="checkbox"/> Corrective Action Plan <input type="checkbox"/> Qualification Standard <input checked="" type="checkbox"/> Other (specify): DOE Handbook	Title: DOE-HDBK-1122-2009  Specific Citation: Phase II – Practical Training  Phase I academic objectives provide the bases for skills and tasks to be performed in Phase II. Practical training utilizes a mixture of classroom and hands-on training. RCTs are taught to apply academic knowledge to the site-specific tasks.  (a) The practical phase consists of two parts: training and evaluation. Further guidance on the development and conduct of practical training and evaluation is given in the “Practical Training Guide” section of this program.
<input type="checkbox"/> Federal or Other Regulations <input type="checkbox"/> DOE Directives <input type="checkbox"/> Consensus Standards (i.e. ANSI, ASTM) LANL Requirements: <input checked="" type="checkbox"/> Policy/Procedure Change <input type="checkbox"/> Notices <input type="checkbox"/> Corrective Action Plan <input type="checkbox"/> Qualification Standard <input type="checkbox"/> Other (specify)	Title: LANL Procedure P-121, <i>Radiation Protection</i>  Specific Citation: §832 (3)  (3) All RCTs must be trained, qualified, and requalified in accordance with RP requirements. This applies to all regular employees and subcontractors performing RCT activities (with the exception of work under an RSAA).
<input type="checkbox"/> Federal or Other Regulations <input type="checkbox"/> DOE Directives <input type="checkbox"/> Consensus Standards (i.e. ANSI, ASTM) LANL Requirements: <input type="checkbox"/> Policy/Procedure Change <input type="checkbox"/> Notices <input type="checkbox"/> Corrective Action Plan <input checked="" type="checkbox"/> Qualification Standard <input type="checkbox"/> Other (specify)	Title: RP-PROG-QS-002, <i>Qualification Standard, Radiological Control Technician</i>  Specific Citation: 5.5.3 Operational Evaluations  (1) The RCT training program shall consist of the following Operational Evaluations: <ul style="list-style-type: none"> <li>• On-the-Job Training Evaluations</li> <li>• Practical Training Evaluations</li> </ul>
<input checked="" type="checkbox"/> Attach the analysis plan or briefly describe the analysis process used.	
RP-PROG-QS-002, <i>Qualification Standard Radiological Control Technician</i> , Attachment 1- Needs Analysis Report	
<input checked="" type="checkbox"/> Attach the analysis results or list the duties and tasks.	
RP-PROG-QS-002, <i>Qualification Standard Radiological Control Technician</i> , Attachment 2- Job Task Analysis Report	
<input checked="" type="checkbox"/> Courses at LANL or in the DOE complex that were reviewed and <u>ARE</u> relevant to this course	
Course # 20301, Radiological Worker II Course # 8770, Contamination Control Course # 8780, Personnel Decontamination	
<input checked="" type="checkbox"/> List any lessons learned or incidents relevant to this course	
LANL-2019-1966, <i>Contamination Found on Inner Glove During Radiological Hood Work</i> LANL-2018-1246, <i>Skin Contamination Following a Radiological Hot Job</i>	

<input checked="" type="checkbox"/> List the names and title of personnel interviewed regarding course content (requester, managers, subject matter experts, expert performers, etc.)			
Keith Luna – RP- PROG Team Lead Training Matthew Hill – RP-PROG Training Coordinator Justin Gillilan – Health Physicist Patrick O’Sullivan – Health Physicist Timothy Vance – Health Physics Field Coordinator James Mang – Health Physics Field Coordinator Bryan Bonser – Health Physics Field Coordinator Kevin Sadowsky – Health Physics Field Coordinator			
Design			
Course Level Determination			
<input checked="" type="checkbox"/> Level 1 – Awareness	<input checked="" type="checkbox"/> Level 2 – Knowledge	<input type="checkbox"/> Level 3 – Application	<input type="checkbox"/> Level 4 – Mastery, Expert
Delivery Method <input type="checkbox"/> Web-based <input checked="" type="checkbox"/> Classroom <input type="checkbox"/> OJT <input checked="" type="checkbox"/> Other – RP Practical Facility			
<input checked="" type="checkbox"/> Terminal Objective:  TO1: Given a work scenario, demonstrate the use of Anti-C PPE in accordance with P121, <i>Radiation Protection</i> and RP-PROG-TP-200, <i>Radiation Protection Manual</i> .			
<input checked="" type="checkbox"/> Enabling Objectives:  EO1: Perform selection and inspection of the required Anti-C PPE EO2: Perform donning of Anti-C PPE EO3: Perform doffing of Anti-C PPE EO4: Perform a whole-body frisk			
<input checked="" type="checkbox"/> Evaluation Criteria <div style="margin-left: 40px;"> <input checked="" type="checkbox"/> Level I  <input checked="" type="checkbox"/> Level II  <input type="checkbox"/> Quiz  <input type="checkbox"/> Test  <input type="checkbox"/> Performance  <input type="checkbox"/> Other – provide details         </div>			
Development			
<input checked="" type="checkbox"/> Attach Lesson Plan. <input checked="" type="checkbox"/> Include the following: <ul style="list-style-type: none"> <li>• Dynamic Learning Activity (DLA), Use of Anti-C PPE</li> <li>• Donning/Doffing Instructions</li> <li>• Whole-Body Frisk Instructions</li> <li>• Practical Evaluation Sheet, Use of Anti-C PPE Course # 50436</li> </ul>			

☒ Pilot session:

08/03/2020 – 08/06/2020

- Describe results: Feedback from students and instructor was gathered to find areas which can be improved
- Actions taken based on feedback: see attached SAT Lesson Plan Revision 1.0 summary.

09/16/2021

- RP-PROG Practical Training Instructors reviewed training material for impact of new facility configuration and projected training schedule
- All incorporated changes are listed in *SAT Lesson Plan, Table 1 Revision History* (attached).

01/27/2022

- RP-PROG Practical Training Instructors reviewed training material for impact of new facility configuration and projected training schedule
- All incorporated changes are listed in *SAT Lesson Plan, Table 1 Revision History* (attached).

Implementation

☒ Documentation

- RP-PROG Level 1 Evaluation Form
- RP-PROG-TP-200, *RP Manual, Chapter 10, Personal Protective Equipment, Revision 1.1*
- P121, *Radiation Protection, Chapter 10, Personal Protective Equipment, Revision 6*

Evaluation

☒ Level I: RP-PROG Level 1 Evaluation form provided to students for feedback on class effectiveness

☒ Level II: Practical Evaluation Scenario- Use of Anti-C PPE, PPE-01.

Requirements for completion of practical evaluation:

- Receive a final score of  $\geq 80\%$  on Practical Evaluation
- All critical objectives are completed successfully
- Standards for appropriate responses are found within DLA
- All missed points documented by evaluator comments

Or

- Satisfactory completion of the *Use of Anti-C PPE* section of a Comprehensive Practical Assessment

**Organization Name**  
RP-PROG

**Course Title**  
Radiological Surveys

**Course Number**  
50437

**Revision Number**  
1.0

Developer	<u>Justin Gillilan</u> Developer Name ( <i>print</i> )	<u>Justin Gillilan</u> Signature	<small>Digitally signed by Justin Gillilan Date: 2022.02.24 12:02:15 -07'00'</small> <u>02/24/22</u> Date
Subject Matter Review	<u>Matthew Hill</u> Subject Matter Expert ( <i>print</i> )	<u>MATTHEW HILL (Affiliate)</u> Signature	<small>Digitally signed by MATTHEW HILL (Affiliate) Date: 2022.02.24 12:15:58 -07'00'</small> <u>02/24/2022</u> Date
Approval	<u>Keith Luna</u> FOD/Programmatic Representative ( <i>print</i> )	<u>KEITH LUNA (Affiliate)</u> Signature	<small>Digitally signed by KEITH LUNA (Affiliate) Date: 2022.02.28 07:50:16 -07'00'</small> <u>02/28/2022</u> Date

**This document does not contain scientific or technical information  
DUSA Designator: RADPRO**

## Systematic Approach to Training Checklist

Course Title: Comprehensive Practical Assessment		
Course Number: 50437	Revision # 1.0	Date 02/14/22
Developer: Justin Gillilan		
Requester of Training: RP-PROG		
Description of Training Request: Initial Training for Radiological Control Technicians (RCTs) designed to meet the practical training requirements of DOE-HDBK-1122-2009.		
Target Audience Analysis: RCTs		

Analysis	
Course Drivers:	
<input checked="" type="checkbox"/> Federal or Other Regulations <input type="checkbox"/> DOE Directives <input type="checkbox"/> Consensus Standards (i.e. ANSI, ASTM) LANL Requirements: <input type="checkbox"/> Policy/Procedure Change <input type="checkbox"/> Notices <input type="checkbox"/> Corrective Action Plan <input type="checkbox"/> Qualification Standard <input type="checkbox"/> Other (specify)	<p>Title: 10 CFR 835 - <i>OCCUPATIONAL RADIATION PROTECTION</i></p> <p>Specific Citation: §835.901 (a), (c) Radiation safety training</p> <p>(a) Each individual shall complete radiation safety training on the topics established at §835.901(c) commensurate with the hazards in the area and the required controls:</p> <p>(c) Radiation safety training shall include the following topics, to the extent appropriate to each individual's prior training, work assignments, and degree of exposure to potential radiological hazards:</p> <ol style="list-style-type: none"> <li>(1) Risks of exposure to radiation and radioactive materials, including prenatal radiation exposure;</li> <li>(2) Basic radiological fundamentals and radiation protection concepts;</li> <li>(3) Physical design features, administrative controls, limits, policies, procedures, alarms, and other measures implemented at the facility to manage doses and maintain doses ALARA, including both routine and emergency actions</li> <li>(4) Individual rights and responsibilities as related to implementation of the facility radiation protection program;</li> <li>(5) Individual responsibilities for implementing ALARA measures required by §835.101; and</li> <li>(6) Individual exposure reports that may be requested in accordance with §835.801.</li> </ol>

<input type="checkbox"/> Federal or Other Regulations <input type="checkbox"/> DOE Directives <input type="checkbox"/> Consensus Standards (i.e. ANSI, ASTM) LANL Requirements: <input type="checkbox"/> Policy/Procedure Change <input type="checkbox"/> Notices <input type="checkbox"/> Corrective Action Plan <input type="checkbox"/> Qualification Standard <input checked="" type="checkbox"/> Other (specify): DOE Handbook	Title: DOE-HDBK-1122-2009  Specific Citation: Phase II – Practical Training  Phase I academic objectives provide the bases for skills and tasks to be performed in Phase II. Practical training utilizes a mixture of classroom and hands-on training. RCTs are taught to apply academic knowledge to the site-specific tasks.  (a) The practical phase consists of two parts: training and evaluation. Further guidance on the development and conduct of practical training and evaluation is given in the “Practical Training Guide” section of this program.
<input type="checkbox"/> Federal or Other Regulations <input type="checkbox"/> DOE Directives <input type="checkbox"/> Consensus Standards (i.e. ANSI, ASTM) LANL Requirements: <input checked="" type="checkbox"/> Policy/Procedure Change <input type="checkbox"/> Notices <input type="checkbox"/> Corrective Action Plan <input type="checkbox"/> Qualification Standard <input type="checkbox"/> Other (specify)	Title: LANL Procedure P-121 Radiation Protection Procedure  Specific Citation: §832 (3)  (3) All RCTs must be trained, qualified, and requalified in accordance with RP requirements. This applies to all regular employees and subcontractors performing RCT activities (with the exception of work under an RSAA).
<input type="checkbox"/> Federal or Other Regulations <input type="checkbox"/> DOE Directives <input type="checkbox"/> Consensus Standards (i.e. ANSI, ASTM) LANL Requirements: <input type="checkbox"/> Policy/Procedure Change <input type="checkbox"/> Notices <input type="checkbox"/> Corrective Action Plan <input checked="" type="checkbox"/> Qualification Standard <input type="checkbox"/> Other (specify)	Title: RP-PROG-QS-002, <i>Qualification Standard, Radiological Control Technician</i>  Specific Citation: 5.5.3 Operational Evaluations  (1) The RCT training program shall consist of the following Operational Evaluations: <ul style="list-style-type: none"> <li>• On-the-Job Training Evaluations</li> <li>• Practical Training Evaluations</li> </ul>
<input checked="" type="checkbox"/> Attach the analysis plan or briefly describe the analysis process used.	
RP-PROG-QS-002, <i>Qualification Standard Radiological Control Technician</i> , Attachment 1- Needs Analysis Report	
<input checked="" type="checkbox"/> Attach the analysis results or list the duties and tasks.	
RP-PROG-QS-002, <i>Qualification Standard Radiological Control Technician</i> , Attachment 2- Job Task Analysis Report	
<input checked="" type="checkbox"/> Courses at LANL or in the DOE complex that were reviewed and <u>ARE</u> relevant to this course	
Course # 20301, Radiological Worker II Course # 8770, Contamination Control Course # 8772, Air Sampling Programs and Methods Course # 50065, RCT - RP-PROG-TP-200 Radiation Protection Manual (RPM) Overview	
<input checked="" type="checkbox"/> List any lessons learned or incidents relevant to this course	
OPEX LANL- 2018-1160 Lesson Learned “Failure to Implement Contamination Control Requirements at the Lujan Center”	

<input checked="" type="checkbox"/> List the names and title of personnel interviewed regarding course content (requester, managers, subject matter experts, expert performers, etc.)			
Keith Luna – RP- PROG Team Lead Training Matthew Hill – RP-PROG Training Coordinator Justin Gillilan – Health Physicist Patrick O’Sullivan – Health Physicist Timothy Vance – Health Physics Field Coordinator James Mang – Health Physics Field Coordinator Bryan Bonser – Health Physics Field Coordinator Kevin Sadowsky – Health Physics Field Coordinator			
Design			
Course Level Determination			
<input type="checkbox"/> Level 1 – Awareness	<input checked="" type="checkbox"/> Level 2 – Knowledge	<input type="checkbox"/> Level 3 – Application	<input type="checkbox"/> Level 4 – Mastery, Expert
Delivery Method <input type="checkbox"/> Web-based <input checked="" type="checkbox"/> Classroom <input type="checkbox"/> OJT <input checked="" type="checkbox"/> Other – RP Practical Facility			
<input checked="" type="checkbox"/> Terminal Objective – TO1: Given the work scenario, perform radiological surveys in accordance with P121, <i>Radiation Protection</i> and RP-PROG-TP-200, <i>Radiation Protection Manual</i> .			
<input checked="" type="checkbox"/> Enabling Objectives – EO1: Perform instrument operability checks EO2: Perform external radiation surveys EO3: Perform contamination surveys EO4: Perform an air sample filter change EO5: Complete documentation			
<input checked="" type="checkbox"/> Evaluation Criteria <input checked="" type="checkbox"/> Level I <input checked="" type="checkbox"/> Level II <input type="checkbox"/> Quiz <input type="checkbox"/> Test <input type="checkbox"/> Performance <input type="checkbox"/> Other – provide details			
Development			
<input checked="" type="checkbox"/> Attach Lesson Plan <input checked="" type="checkbox"/> Include the following: <ul style="list-style-type: none"> <li>• Dynamic Learning Activity (DLA), <i>Radiation Surveys</i></li> <li>• Dynamic Learning Activity (DLA), <i>Contamination and Airborne Surveys</i></li> <li>• Practical Evaluation – <i>Radiological Surveys</i></li> <li>• Practical Evaluation Scenario – Student, <i>Scenario ID: RS-01</i></li> <li>• Radiological Survey Worksheets</li> </ul> <input checked="" type="checkbox"/> Pilot session, see attached 08/24/20 – 08/28/20 <ul style="list-style-type: none"> <li>• Describe Results: Feedback from students and instructor was gathered to find areas which can be improved</li> <li>• Actions taken based on feedback: see attached feedback form</li> </ul> 01/31/2022 <ul style="list-style-type: none"> <li>• RP-PROG Practical Training Instructors reviewed training material for impact of new facility configuration and projected training schedule</li> <li>• All incorporated changes are listed in <i>SAT Lesson Plan, Table 1 Revision History</i> (attached).</li> </ul>			

<b>Implementation</b>
<input checked="" type="checkbox"/> Documentation <ul style="list-style-type: none"><li>• RP-PROG Level 1 Evaluation Form</li><li>• P121, <i>Radiation Protection</i>, Revision 6</li><li>• RP-PROG-TP-200, <i>RP Manual, Attachment 14</i>, Revision 1.1</li><li>• RP-PROG-TP-201, <i>Radiological Emergency Response</i>, Revision 1</li><li>• RP-PROG-FORM-114, <i>Radiological Survey – External Radiation/Contamination Form</i>, Revision 1</li><li>• RP-PROG-FORM-020, <i>Air Sampler Flow Rate Verification</i>, Revision 4</li></ul>
<b>Evaluation</b>
<input checked="" type="checkbox"/> Level I: A level I evaluation form was given to students for feedback to better improve future revisions
<input checked="" type="checkbox"/> Level II: Practical Evaluation Scenario – Radiological Surveys <p>Requirements for completion of practical evaluation:</p> <ul style="list-style-type: none"><li>• Receive a final score of <math>\geq 80\%</math> on Practical Evaluation</li><li>• All critical objectives are completed successfully</li><li>• Standards for appropriate responses are found within DLA</li><li>• All missed points documented by evaluator comments</li></ul> <p>Or</p> <p>Satisfactory completion of the <i>Radiological Surveys</i> section of a Comprehensive Practical Assessment</p>



**This document does not contain scientific or technical information**  
**DUSA Designator: RADPRO**

## Systematic Approach to Training Checklist

Course Title: Submitting Samples to HPAL		
Course Number: 50439	Revision # 3.0	Date 05/18/2022
Developer: Timothy Vance		
Requester of Training: RP-PROG		
Description of Training Request: Initial Training for Radiological Control Technicians (RCTs) designed to meet the practical training requirements of DOE-HDBK-1122-2009.		
Target Audience Analysis: RCTs		

Analysis	
Course Drivers:	
<div><input checked="" type="checkbox"/> Federal or Other Regulations</div> <div><input type="checkbox"/> DOE Directives</div> <div><input type="checkbox"/> Consensus Standards (i.e. ANSI, ASTM)</div> <div>LANL Requirements:</div> <div><input type="checkbox"/> Policy/Procedure Change</div> <div><input type="checkbox"/> Notices</div> <div><input type="checkbox"/> Corrective Action Plan</div> <div><input type="checkbox"/> Qualification Standard</div> <div><input type="checkbox"/> Other (specify)</div>	<p>Title: 10 CFR 835 - <i>OCCUPATIONAL RADIATION PROTECTION</i></p> <p>Specific Citation: §835.901 (a), (c) Radiation safety training</p> <p>(a) Each individual shall complete radiation safety training on the topics established at §835.901(c) commensurate with the hazards in the area and the required controls:</p> <p>(c) Radiation safety training shall include the following topics, to the extent appropriate to each individual's prior training, work assignments, and degree of exposure to potential radiological hazards:</p> <ol style="list-style-type: none"><li>(1) Risks of exposure to radiation and radioactive materials, including prenatal radiation exposure;</li><li>(2) Basic radiological fundamentals and radiation protection concepts;</li><li>(3) Physical design features, administrative controls, limits, policies, procedures, alarms, and other measures implemented at the facility to manage doses and maintain doses ALARA, including both routine and emergency actions</li><li>(4) Individual rights and responsibilities as related to implementation of the facility radiation protection program;</li><li>(5) Individual responsibilities for implementing ALARA measures required by §835.101; and</li><li>(6) Individual exposure reports that may be requested in accordance with §835.801.</li></ol>

<input type="checkbox"/> Federal or Other Regulations <input type="checkbox"/> DOE Directives <input type="checkbox"/> Consensus Standards (i.e. ANSI, ASTM) LANL Requirements: <input type="checkbox"/> Policy/Procedure Change <input type="checkbox"/> Notices <input type="checkbox"/> Corrective Action Plan <input type="checkbox"/> Qualification Standard <input checked="" type="checkbox"/> Other (specify): DOE Handbook	Title: DOE-HDBK-1122-2009  Specific Citation: Phase II – Practical Training  Phase I academic objectives provide the bases for skills and tasks to be performed in Phase II. Practical training utilizes a mixture of classroom and hands-on training. RCTs are taught to apply academic knowledge to the site-specific tasks.  (a) The practical phase consists of two parts: training and evaluation. Further guidance on the development and conduct of practical training and evaluation is given in the “Practical Training Guide” section of this program.
<input type="checkbox"/> Federal or Other Regulations <input type="checkbox"/> DOE Directives <input type="checkbox"/> Consensus Standards (i.e. ANSI, ASTM) LANL Requirements: <input checked="" type="checkbox"/> Policy/Procedure Change <input type="checkbox"/> Notices <input type="checkbox"/> Corrective Action Plan <input type="checkbox"/> Qualification Standard <input type="checkbox"/> Other (specify)	Title: LANL Procedure P-121 Radiation Protection Procedure  Specific Citation: §832 (3)  (3) All RCTs must be trained, qualified, and requalified in accordance with RP requirements. This applies to all regular employees and subcontractors performing RCT activities (with the exception of work under an RSAA).
<input type="checkbox"/> Federal or Other Regulations <input type="checkbox"/> DOE Directives <input type="checkbox"/> Consensus Standards (i.e. ANSI, ASTM) LANL Requirements: <input type="checkbox"/> Policy/Procedure Change <input type="checkbox"/> Notices <input type="checkbox"/> Corrective Action Plan <input checked="" type="checkbox"/> Qualification Standard <input type="checkbox"/> Other (specify)	Title: RP-PROG-QS-002, <i>Qualification Standard, Radiological Control Technician</i>  Specific Citation: 5.5.3 Operational Evaluations  (1) The RCT training program shall consist of the following Operational Evaluations: <ul style="list-style-type: none"> <li>• On-the-Job Training Evaluations</li> <li>• Practical Training Evaluations</li> </ul>
<input checked="" type="checkbox"/> Attach the analysis plan or briefly describe the analysis process used.	
RP-PROG-QS-002, <i>Qualification Standard Radiological Control Technician</i> , Attachment 1- Needs Analysis Report	
<input checked="" type="checkbox"/> Attach the analysis results or list the duties and tasks.	
RP-PROG-QS-002, <i>Qualification Standard Radiological Control Technician</i> , Attachment 2- Job Task Analysis Report	
<input checked="" type="checkbox"/> Courses at LANL or in the DOE complex that were reviewed and <u>ARE</u> relevant to this course	
Course # 20301, Radiological Worker II Course # 8770, Contamination Control Course #49858, HPAL Sample Control and Tracking	
<input checked="" type="checkbox"/> List any lessons learned or incidents relevant to this course	
OE Summary 2018 – 03 “Mishandling Radioactive Sources and Samples”	
<input checked="" type="checkbox"/> List the names and title of personnel interviewed regarding course content (requester, managers, subject matter experts, expert performers, etc.)	

Keith Luna – RP- PROG Team Lead Training Matthew Hill – RP-PROG Training Coordinator Justin Gillilan – Health Physicist Patrick O’Sullivan – Health Physicist Timothy Vance – Health Physics Field Coordinator James Mang – Health Physics Field Coordinator Bryan Bonser – Health Physics Field Coordinator Kevin Sadowsky – Health Physics Field Coordinator			
Design			
Course Level Determination			
<input type="checkbox"/> Level 1 – Awareness	<input checked="" type="checkbox"/> Level 2 – Knowledge	<input type="checkbox"/> Level 3 – Application	<input type="checkbox"/> Level 4 – Mastery, Expert
Delivery Method <input type="checkbox"/> Web-based <input checked="" type="checkbox"/> Classroom <input type="checkbox"/> OJT <input checked="" type="checkbox"/> Other – RP Practical Facility			
<input checked="" type="checkbox"/> Terminal Objective – TO1: Given the work scenario, submit samples to HPAL in accordance with P121 <i>Radiation Protection</i> , RP-PROG-TP-200 <i>Radiation Protection Manual</i> , RP-PROG-TP-203, <i>Packaging and Transporting Requirements for RP Activities</i> , and RP-PROG-TP-205, <i>Submitting Samples to HPAL</i> .			
<input checked="" type="checkbox"/> Enabling Objectives – EO1: Prepare a gross alpha/beta activity sample for HPAL EO2: Prepare a tritium sample for HPAL EO3: Respond to a sample exceeding HPAL notification limits EO4: Package a sample for shipment to HPAL EO5: Submit sample to HPAL for analysis EO6: Log sample out of HPAL system EO7: Calculating DAC fractions from HPAL results			
<input checked="" type="checkbox"/> Evaluation Criteria <input checked="" type="checkbox"/> Level I <input checked="" type="checkbox"/> Level II <input type="checkbox"/> Quiz <input type="checkbox"/> Test <input type="checkbox"/> Performance <input type="checkbox"/> Other – provide details			
Development			
<input checked="" type="checkbox"/> Attach Lesson Plan  <input checked="" type="checkbox"/> Include the following: <ul style="list-style-type: none"> <li>• Dynamic Learning Activity (DLA), <i>Submitting Samples to HPAL</i></li> <li>• Practical Evaluation - <i>Submitting Samples to HPAL, Course #50439</i></li> <li>• HPAL Analysis Report examples</li> <li>• RP-SVS-HPAL-FORM-001, <i>RP SVS HPAL Sample Submittal Form</i></li> </ul>			
<input checked="" type="checkbox"/> Pilot session, see attached 05/09/2022 <ul style="list-style-type: none"> <li>• RP-PROG Practical Training Instructors reviewed training material for impact of new projected training schedule</li> <li>• All incorporated changes are listed in <i>SAT Lesson Plan, Table 1 Revision History</i> (attached).</li> </ul>			
Implementation			
<input checked="" type="checkbox"/> Documentation <ul style="list-style-type: none"> <li>• RP-PROG Level 1 Evaluation Form</li> <li>• P121, <i>Radiation Protection, Chapter 14 Contamination Control, Revision 6</i></li> </ul>			

- RP-PROG-TP-201, *Radiological Emergency Response, Section 4.11 Nasal Swipes, Revision 1*
- RP-PROG-TP-200, *RP Manual, Attachment 6, Workplace Monitoring, Revision 1.1*
- RP-PROG-TP-203, *Packaging and Transporting Requirements for RP Activities, Revision 0*
- RP-PROG-TP-205, *Submitting Samples to HPAL, Revision 0*

#### **Evaluation**

☒ Level I: A level 1 evaluation form was given to students for feedback to better improve future revisions

☒ Level II: Practical Evaluation Scenario - Submitting Samples to HPAL

Requirements for completion of practical evaluation:

- Receive a final score of  $\geq 80\%$  on Practical Evaluation
- All critical objectives are completed successfully
- Standards for appropriate responses are found within DLA
- All missed points documented by evaluator comments

**Organization Name**  
RP-PROG

**Course Title**  
Item Release

**Course Number**  
50440

**Revision Number**  
1.0

Developer	<u>Justin Gillilan</u> Developer Name ( <i>print</i> )	<u>Justin Gillilan</u> Signature	<u>02/08/22</u> Date
Subject Matter Review	<u>Matthew Hill</u> Subject Matter Expert ( <i>print</i> )	<u>MATTHEW HILL (Affiliate)</u> Signature	<u>02/10/2022</u> Date
Approval	<u>Keith Luna</u> FOD/Programmatic Representative ( <i>print</i> )	<u>KEITH LUNA (Affiliate)</u> Signature	<u>06/23/2022</u> Date

**This document does not contain scientific or technical information  
DUSA Designator: RADPRO**

## Systematic Approach to Training Checklist

Course Title: Item Release		
Course Number: 50440	Revision # 1.0	Date 02/07/22
Developer: Justin Gillilan		
Requester of Training: RP-PROG		
Description of Training Request: Initial Training for Radiological Control Technicians (RCTs) designed to meet the practical training requirements of DOE-HDBK-1122-2009.		
Target Audience Analysis: RCTs		

Analysis	
Course Drivers:	
<div><input checked="" type="checkbox"/> Federal or Other Regulations</div> <div><input type="checkbox"/> DOE Directives</div> <div><input type="checkbox"/> Consensus Standards (i.e. ANSI, ASTM)</div> <div>LANL Requirements:</div> <div><input type="checkbox"/> Policy/Procedure Change</div> <div><input type="checkbox"/> Notices</div> <div><input type="checkbox"/> Corrective Action Plan</div> <div><input type="checkbox"/> Qualification Standard</div> <div><input type="checkbox"/> Other (specify)</div>	<p>Title: 10 CFR 835 - <i>OCCUPATIONAL RADIATION PROTECTION</i></p> <p>Specific Citation: §835.901 (a), (c) Radiation safety training</p> <p>(a) Each individual shall complete radiation safety training on the topics established at §835.901(c) commensurate with the hazards in the area and the required controls:</p> <p>(c) Radiation safety training shall include the following topics, to the extent appropriate to each individual's prior training, work assignments, and degree of exposure to potential radiological hazards:</p> <ol style="list-style-type: none"><li>(1) Risks of exposure to radiation and radioactive materials, including prenatal radiation exposure;</li><li>(2) Basic radiological fundamentals and radiation protection concepts;</li><li>(3) Physical design features, administrative controls, limits, policies, procedures, alarms, and other measures implemented at the facility to manage doses and maintain doses ALARA, including both routine and emergency actions</li><li>(4) Individual rights and responsibilities as related to implementation of the facility radiation protection program;</li><li>(5) Individual responsibilities for implementing ALARA measures required by §835.101; and</li><li>(6) Individual exposure reports that may be requested in accordance with §835.801.</li></ol>

<input type="checkbox"/> Federal or Other Regulations <input type="checkbox"/> DOE Directives <input type="checkbox"/> Consensus Standards (i.e. ANSI, ASTM) LANL Requirements: <input type="checkbox"/> Policy/Procedure Change <input type="checkbox"/> Notices <input type="checkbox"/> Corrective Action Plan <input type="checkbox"/> Qualification Standard <input checked="" type="checkbox"/> Other (specify): DOE Handbook	Title: DOE-HDBK-1122-2009  Specific Citation: Phase II – Practical Training  Phase I academic objectives provide the bases for skills and tasks to be performed in Phase II. Practical training utilizes a mixture of classroom and hands-on training. RCTs are taught to apply academic knowledge to the site-specific tasks.  (a) The practical phase consists of two parts: training and evaluation. Further guidance on the development and conduct of practical training and evaluation is given in the “Practical Training Guide” section of this program.
<input type="checkbox"/> Federal or Other Regulations <input type="checkbox"/> DOE Directives <input type="checkbox"/> Consensus Standards (i.e. ANSI, ASTM) LANL Requirements: <input checked="" type="checkbox"/> Policy/Procedure Change <input type="checkbox"/> Notices <input type="checkbox"/> Corrective Action Plan <input type="checkbox"/> Qualification Standard <input type="checkbox"/> Other (specify)	Title: LANL Procedure P-121 Radiation Protection Procedure  Specific Citation: §832 (3)  (3) All RCTs must be trained, qualified, and requalified in accordance with RP requirements. This applies to all regular employees and subcontractors performing RCT activities (with the exception of work under an RSAA).
<input type="checkbox"/> Federal or Other Regulations <input type="checkbox"/> DOE Directives <input type="checkbox"/> Consensus Standards (i.e. ANSI, ASTM) LANL Requirements: <input type="checkbox"/> Policy/Procedure Change <input type="checkbox"/> Notices <input type="checkbox"/> Corrective Action Plan <input checked="" type="checkbox"/> Qualification Standard <input type="checkbox"/> Other (specify)	Title: RP-PROG-QS-002, <i>Qualification Standard, Radiological Control Technician</i>  Specific Citation: 5.5.3 Operational Evaluations  (1) The RCT training program shall consist of the following Operational Evaluations: <ul style="list-style-type: none"> <li>• On-the-Job Training Evaluations</li> <li>• Practical Training Evaluations</li> </ul>
<input checked="" type="checkbox"/> Attach the analysis plan or briefly describe the analysis process used.	
RP-PROG-QS-002, <i>Qualification Standard Radiological Control Technician</i> , Attachment 1- Needs Analysis Report	
<input checked="" type="checkbox"/> Attach the analysis results or list the duties and tasks.	
RP-PROG-QS-002, <i>Qualification Standard Radiological Control Technician</i> , Attachment 2- Job Task Analysis Report	
<input checked="" type="checkbox"/> Courses at LANL or in the DOE complex that were reviewed and <u>ARE</u> relevant to this course	
Course # 20301, Radiological Worker II Course # 8770, Contamination Control Course # 50065, RCT - RP-PROG-TP-200 Radiation Protection Manual (RPM) Overview	
<input checked="" type="checkbox"/> List any lessons learned or incidents relevant to this course	
OPEX LANL- 2020-2750 Lesson Learned “Contaminated Radiological Survey Instruments Received at TA-36 Instrument Calibration Facility”	

<input checked="" type="checkbox"/> List the names and title of personnel interviewed regarding course content (requester, managers, subject matter experts, expert performers, etc.)			
Keith Luna – RP- PROG Team Lead Training Matthew Hill – RP-PROG Training Coordinator Justin Gillilan – Health Physicist Patrick O’Sullivan – Health Physicist Timothy Vance – Health Physics Field Coordinator James Mang – Health Physics Field Coordinator Bryan Bonser – Health Physics Field Coordinator Kevin Sadowsky – Health Physics Field Coordinator			
Design			
Course Level Determination			
<input type="checkbox"/> Level 1 – Awareness	<input checked="" type="checkbox"/> Level 2 – Knowledge	<input type="checkbox"/> Level 3 – Application	<input type="checkbox"/> Level 4 – Mastery, Expert
Delivery Method <input type="checkbox"/> Web-based <input checked="" type="checkbox"/> Classroom <input type="checkbox"/> OJT <input checked="" type="checkbox"/> Other – RP Practical Facility			
<input checked="" type="checkbox"/> Terminal Objective –  TO1: Given a work scenario, release items from radiological areas in accordance with P121 Radiation Protection and RP-PROG-TP-200 Radiation Protection Manual.			
<input checked="" type="checkbox"/> Enabling Objectives –  EO1: Perform a release survey of an item from a CA, HCA, or ARA. EO2: Perform a conditional release survey of an item. EO3: Perform a free-release survey of an item. EO4: Respond to contamination being found during a free-release survey.			
<input checked="" type="checkbox"/> Evaluation Criteria <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Level I</li> <li><input checked="" type="checkbox"/> Level II</li> <li><input type="checkbox"/> Quiz</li> <li><input type="checkbox"/> Test</li> <li><input type="checkbox"/> Performance</li> <li><input type="checkbox"/> Other – provide details</li> </ul>			
Development			
<input checked="" type="checkbox"/> Attach Lesson Plan			
<input checked="" type="checkbox"/> Include the following: <ul style="list-style-type: none"> <li>• Dynamic Learning Activity (DLA), <i>Item Release</i></li> <li>• Practical Evaluation – <i>Item Release, Course #50440</i></li> </ul>			
<input checked="" type="checkbox"/> Pilot session, see attached 08/24/20 – 08/28/20 <ul style="list-style-type: none"> <li>• Describe Results: Feedback from students and instructor was gathered to find areas which can be improved</li> <li>• Actions taken based on feedback: see attached feedback form</li> </ul> 01/31/2022 <ul style="list-style-type: none"> <li>• RP-PROG Practical Training Instructors reviewed training material for impact of new facility configuration and projected training schedule</li> <li>• All incorporated changes are listed in <i>SAT Lesson Plan, Table 1 Revision History</i> (attached).</li> </ul>			

<b>Implementation</b>
<input checked="" type="checkbox"/> Documentation <ul style="list-style-type: none"><li>• RP-PROG Level 1 Evaluation Form</li><li>• P121, <i>Radiation Protection, Chapter 14 Contamination Control, Revision 6</i></li><li>• RP-PROG-TP-200, <i>RP Manual, Attachment 14, Contamination Control, Revision 1.1</i></li><li>• RP-PROG-FORM-114, <i>Radiological Survey – External Radiation/Contamination Form, Revision 1</i></li><li>• RP-PROG-FORM-024, <i>Item Removal Log, Revision 1</i></li><li>• Health Physics Radioactive Material Survey (HPRMS) Tag</li></ul>
<b>Evaluation</b>
<input checked="" type="checkbox"/> Level I: A level I evaluation form was given to students for feedback to better improve future revisions
<input checked="" type="checkbox"/> Level II: Practical Evaluation Scenario – Item Release <p>Requirements for completion of practical evaluation:</p> <ul style="list-style-type: none"><li>• Receive a final score of <math>\geq 80\%</math> on Practical Evaluation</li><li>• All critical objectives are completed successfully</li><li>• Standards for appropriate responses are found within DLA</li><li>• All missed points documented by evaluator comments</li></ul> <p>Or</p> <ul style="list-style-type: none"><li>• Satisfactory completion of the <i>Item Release</i> section of a Comprehensive Practical Assessment</li></ul>

**Organization Name**  
RP-PROG

**Course Title**  
Job Coverage

**Course Number**  
50441

**Revision Number**  
1.0

Developer	<u>Justin Gillilan</u> Developer Name ( <i>print</i> )	<u>Justin Gillilan</u> Signature	<small>Digitally signed by Justin Gillilan Date: 2022.02.22 16:09:24 -07'00'</small> <u>02/22/22</u> Date
Subject Matter Review	<u>Matthew Hill</u> Subject Matter Expert ( <i>print</i> )	<u>MATTHEW HILL (Affiliate)</u> Signature	<small>Digitally signed by MATTHEW HILL (Affiliate) Date: 2022.02.23 08:52:19 -07'00'</small> <u>02/23/22</u> Date
Approval	<u>Keith Luna</u> FOD/Programmatic Representative ( <i>print</i> )	<u>KEITH LUNA (Affiliate)</u> Signature	<small>Digitally signed by KEITH LUNA (Affiliate) Date: 2022.02.23 11:12:20 -07'00'</small> <u>02/23/2022</u> Date

**This document does not contain scientific or technical information  
DUSA Designator: RADPRO**

## Systematic Approach to Training Checklist

Course Title: Job Coverage		
Course Number: 50441	Revision # 1.0	Date 02/15/22
Developer: Justin Gillilan		
Requester of Training: RP-PROG		
Description of Training Request: Initial Training for Radiological Control Technicians (RCTs) designed to meet the practical training requirements of DOE-HDBK-1122-2009.		
Target Audience Analysis: RCTs		

Analysis	
Course Drivers:	
<input checked="" type="checkbox"/> Federal or Other Regulations <input type="checkbox"/> DOE Directives <input type="checkbox"/> Consensus Standards (i.e. ANSI, ASTM) LANL Requirements: <input type="checkbox"/> Policy/Procedure Change <input type="checkbox"/> Notices <input type="checkbox"/> Corrective Action Plan <input type="checkbox"/> Qualification Standard <input type="checkbox"/> Other (specify)	<p>Title: 10 CFR 835 - <i>OCCUPATIONAL RADIATION PROTECTION</i></p> <p>Specific Citation: §835.901 (a), (c) Radiation safety training</p> <p>(a) Each individual shall complete radiation safety training on the topics established at §835.901(c) commensurate with the hazards in the area and the required controls:</p> <p>(c) Radiation safety training shall include the following topics, to the extent appropriate to each individual's prior training, work assignments, and degree of exposure to potential radiological hazards:</p> <ol style="list-style-type: none"> <li>(1) Risks of exposure to radiation and radioactive materials, including prenatal radiation exposure;</li> <li>(2) Basic radiological fundamentals and radiation protection concepts;</li> <li>(3) Physical design features, administrative controls, limits, policies, procedures, alarms, and other measures implemented at the facility to manage doses and maintain doses ALARA, including both routine and emergency actions</li> <li>(4) Individual rights and responsibilities as related to implementation of the facility radiation protection program;</li> <li>(5) Individual responsibilities for implementing ALARA measures required by §835.101; and</li> <li>(6) Individual exposure reports that may be requested in accordance with §835.801.</li> </ol>

<input type="checkbox"/> Federal or Other Regulations <input type="checkbox"/> DOE Directives <input type="checkbox"/> Consensus Standards (i.e. ANSI, ASTM) LANL Requirements: <input type="checkbox"/> Policy/Procedure Change <input type="checkbox"/> Notices <input type="checkbox"/> Corrective Action Plan <input type="checkbox"/> Qualification Standard <input checked="" type="checkbox"/> Other (specify): DOE Handbook	Title: DOE-HDBK-1122-2009  Specific Citation: Phase II – Practical Training  Phase I academic objectives provide the bases for skills and tasks to be performed in Phase II. Practical training utilizes a mixture of classroom and hands-on training. RCTs are taught to apply academic knowledge to the site-specific tasks.  (a) The practical phase consists of two parts: training and evaluation. Further guidance on the development and conduct of practical training and evaluation is given in the “Practical Training Guide” section of this program.
<input type="checkbox"/> Federal or Other Regulations <input type="checkbox"/> DOE Directives <input type="checkbox"/> Consensus Standards (i.e. ANSI, ASTM) LANL Requirements: <input checked="" type="checkbox"/> Policy/Procedure Change <input type="checkbox"/> Notices <input type="checkbox"/> Corrective Action Plan <input type="checkbox"/> Qualification Standard <input type="checkbox"/> Other (specify)	Title: LANL Procedure P-121 Radiation Protection Procedure  Specific Citation: §832 (3)  (3) All RCTs must be trained, qualified, and requalified in accordance with RP requirements. This applies to all regular employees and subcontractors performing RCT activities (with the exception of work under an RSAA).
<input type="checkbox"/> Federal or Other Regulations <input type="checkbox"/> DOE Directives <input type="checkbox"/> Consensus Standards (i.e. ANSI, ASTM) LANL Requirements: <input type="checkbox"/> Policy/Procedure Change <input type="checkbox"/> Notices <input type="checkbox"/> Corrective Action Plan <input checked="" type="checkbox"/> Qualification Standard <input type="checkbox"/> Other (specify)	Title: RP-PROG-QS-002, <i>Qualification Standard, Radiological Control Technician</i>  Specific Citation: 5.5.3 Operational Evaluations  (1) The RCT training program shall consist of the following Operational Evaluations: <ul style="list-style-type: none"> <li>• On-the-Job Training Evaluations</li> <li>• Practical Training Evaluations</li> </ul>
<input checked="" type="checkbox"/> Attach the analysis plan or briefly describe the analysis process used.	
RP-PROG-QS-002, <i>Qualification Standard Radiological Control Technician</i> , Attachment 1- Needs Analysis Report	
<input checked="" type="checkbox"/> Attach the analysis results or list the duties and tasks.	
RP-PROG-QS-002, <i>Qualification Standard Radiological Control Technician</i> , Attachment 2- Job Task Analysis Report	
<input checked="" type="checkbox"/> Courses at LANL or in the DOE complex that were reviewed and <u>ARE</u> relevant to this course	
Course # 20301, Radiological Worker II Course # 50065, RCT - RP-PROG-TP-200 Radiation Protection Manual (RPM) Overview Contamination Control Course # 8770	
<input checked="" type="checkbox"/> List any lessons learned or incidents relevant to this course	
OPEX LANL- 2018-1160 Lesson Learned “Failure to Implement Contamination Control Requirements at the Lujan Center”	
<input checked="" type="checkbox"/> List the names and title of personnel interviewed regarding course content (requester, managers, subject matter experts, expert performers, etc.)	

Keith Luna – RP- PROG Team Lead Training Matthew Hill – RP-PROG Training Coordinator Justin Gillilan – Health Physicist Patrick O’Sullivan – Health Physicist Timothy Vance – Health Physics Field Coordinator James Mang – Health Physics Field Coordinator Bryan Bonser – Health Physics Field Coordinator Kevin Sadowsky – Health Physics Field Coordinator			
Design			
Course Level Determination			
<input type="checkbox"/> Level 1 – Awareness	<input checked="" type="checkbox"/> Level 2 – Knowledge	<input type="checkbox"/> Level 3 – Application	<input type="checkbox"/> Level 4 – Mastery, Expert
Delivery Method <input type="checkbox"/> Web-based <input checked="" type="checkbox"/> Classroom <input type="checkbox"/> OJT <input checked="" type="checkbox"/> Other – RP Practical Facility			
<input checked="" type="checkbox"/> Terminal Objective – TO1: Given the work scenario, perform job coverage in accordance with P121 <i>Radiation Protection</i> , RP-PROG-TP-200 <i>Radiation Protection Manual</i> and RP-PROG-TP-201 <i>Radiological Emergency Response</i> .			
<input checked="" type="checkbox"/> Enabling Objectives – EO1: Conduct job coverage planning and preparation EO2: Conduct RWP/pre-job briefing EO3: Implement radiological work controls EO4: Perform required job coverage surveys EO5: Respond to an EPD alarm EO6: Complete documentation			
<input checked="" type="checkbox"/> Evaluation Criteria <input checked="" type="checkbox"/> Level I <input checked="" type="checkbox"/> Level II <input type="checkbox"/> Quiz <input type="checkbox"/> Test <input type="checkbox"/> Performance <input type="checkbox"/> Other – provide details			
Development			
<input checked="" type="checkbox"/> Attach Lesson Plan <input checked="" type="checkbox"/> Include the following: <ul style="list-style-type: none"> <li>• Dynamic Learning Activity (DLA), <i>Job Coverage</i></li> <li>• Practical Evaluation – <i>Job Coverage</i></li> <li>• Practical Evaluation Scenario – Student, <i>Scenario ID: JC-01</i></li> </ul> <input checked="" type="checkbox"/> Pilot session, see attached 08/24/20 – 08/28/20 <ul style="list-style-type: none"> <li>• Describe Results: Feedback from students and instructor was gathered to find areas which can be improved</li> <li>• Actions taken based on feedback: see attached feedback form</li> </ul> 01/31/2022 <ul style="list-style-type: none"> <li>• RP-PROG Practical Training Instructors reviewed training material for impact of new facility configuration and projected training schedule</li> <li>• All incorporated changes are listed in <i>SAT Lesson Plan, Table 1 Revision History</i> (attached)</li> </ul>			
Implementation			

- |   |
|---|
| <input checked="" type="checkbox"/> Documentation <ul style="list-style-type: none"><li>• RP-PROG Level 1 Evaluation Form</li><li>• P121, <i>Radiation Protection</i>, Revision 6</li><li>• RP-PROG-TP-200, <i>RP Manual</i>, Revision 1.1</li><li>• RP-PROG-TP-201, <i>Radiological Emergency Response</i>, Revision 1</li><li>• DOE-STD-1098-2017, <i>Radiological Work Control</i>, Chapter 3</li><li>• RP-PROG-FORM-114, <i>Radiological Survey – External Radiation/Contamination Form</i>, Revision 1</li></ul> |
|---|

<b>Evaluation</b>
-------------------

- |  |
|--|
| <input checked="" type="checkbox"/> Level I: A level I evaluation form was given to students for feedback to better improve future revisions |
|--|

- |  |
|--|
| <input checked="" type="checkbox"/> Level II: Practical Evaluation Scenario – Job Coverage |
|--|

Requirements for completion of practical evaluation:

- Receive a final score of  $\geq 80\%$  on Practical Evaluation
- All critical objectives are completed successfully
- Standards for appropriate responses are found within DLA
- All missed points documented by evaluator comments

Or

Satisfactory completion of the *Job Coverage* section of a Comprehensive Practical Assessment

**Organization Name**  
RP-PROG

**Course Title**  
Radiological Emergency Response

**Course Number**  
50442

**Revision Number**  
2.0

Developer	<u>Justin Gillilan</u> Developer Name ( <i>print</i> )	<u>Justin Gillilan</u> Digitally signed by Justin Gillilan Date: 2021.01.19 13:30:57 -07'00' Signature	<u>1/19/21</u> Date
Subject Matter Review	<u>Matthew Hill</u> Subject Matter Expert ( <i>print</i> )	<u>Matthew Bailey Hill</u> Digitally signed by Matthew Bailey Hill Date: 2021.01.19 15:59:13 -07'00' Signature	<u>1/19/21</u> Date
Approval	<u>N/A</u> Institutional Training Services or Organization Representative ( <i>print</i> )	<u>N/A</u> Signature	<u>N/A</u> Date
Approval	<u>Keith Luna</u> FOD/Programmatic Representative ( <i>print</i> )	<u>KEITH LUNA (Affiliate)</u> Digitally signed by KEITH LUNA (Affiliate) Date: 2021.04.02 12:10:53 -06'00' Signature	<u>4/2/21</u> Date

**This document does not contain scientific or technical information  
DUSA Designator: RADPRO**



## Systematic Approach to Training Checklist

Course Title: Radiological Emergency Response		
Course Number: 50442	Revision: # 2.0	Date: 01/14/2021
Developer: Justin Gillilan		
Requester of Training: RP-PROG		
Description of Training Request: Initial training for Radiological Control Technicians (RCTs) designed to meet the practical training requirements of DOE-HDBK-1122-2009.		
Target Audience Analysis: RCTs		

Analysis	
Course Drivers:	
<div><input checked="" type="checkbox"/> Federal or Other Regulations</div> <div><input type="checkbox"/> DOE Directives</div> <div><input type="checkbox"/> Consensus Standards (i.e. ANSI, ASTM)</div> <div>LANL Requirements:</div> <div><input type="checkbox"/> Policy/Procedure Change</div> <div><input type="checkbox"/> Notices</div> <div><input type="checkbox"/> Corrective Action Plan</div> <div><input type="checkbox"/> Qualification Standard</div> <div><input type="checkbox"/> Other (specify)</div>	<div>Title: 10 CFR 835 - <i>OCCUPATIONAL RADIATION PROTECTION</i></div> <div>Specific Citation: §835.901 (a), (c) Radiation safety training</div> <div>(a) Each individual shall complete radiation safety training on the topics established at §835.901(c) commensurate with the hazards in the area and the required controls:</div> <div>(c) Radiation safety training shall include the following topics, to the extent appropriate to each individual's prior training, work assignments, and degree of exposure to potential radiological hazards:</div> <div>(1) Risks of exposure to radiation and radioactive materials, including prenatal radiation exposure;</div> <div>(2) Basic radiological fundamentals and radiation protection concepts;</div> <div>(3) Physical design features, administrative controls, limits, policies, procedures, alarms, and other measures implemented at the facility to manage doses and maintain doses ALARA, including both routine and emergency actions</div> <div>(4) Individual rights and responsibilities as related to implementation of the facility radiation protection program;</div> <div>(5) Individual responsibilities for implementing ALARA measures required by §835.101; and</div> <div>(6) Individual exposure reports that may be requested in accordance with §835.801.</div>

<input type="checkbox"/> Federal or Other Regulations <input checked="" type="checkbox"/> DOE Directives <input type="checkbox"/> Consensus Standards (i.e. ANSI, ASTM) LANL Requirements: <input type="checkbox"/> Policy/Procedure Change <input type="checkbox"/> Notices <input type="checkbox"/> Corrective Action Plan <input type="checkbox"/> Qualification Standard <input type="checkbox"/> Other (specify)	Title: DOE-HDBK-1122-2009  Specific Citation: Phase II – Practical Training  Phase I academic objectives provide the bases for skills and tasks to be performed in Phase II. Practical training utilizes a mixture of classroom and hands-on training. RCTs are taught to apply academic knowledge to the site-specific tasks.  (a) The practical phase consists of two parts: training and evaluation. Further guidance on the development and conduct of practical training and evaluation is given in the “Practical Training Guide” section of this program.
<input type="checkbox"/> Federal or Other Regulations <input type="checkbox"/> DOE Directives <input type="checkbox"/> Consensus Standards (i.e. ANSI, ASTM) LANL Requirements: <input checked="" type="checkbox"/> Policy/Procedure Change <input type="checkbox"/> Notices <input type="checkbox"/> Corrective Action Plan <input type="checkbox"/> Qualification Standard <input type="checkbox"/> Other (specify)	Title: LANL Procedure P-121 Radiation Protection Procedure  Specific Citation: §832 (3)  (3) All RCTs must be trained, qualified, and requalified in accordance with RP requirements. This applies to all regular employees and subcontractors performing RCT activities (with the exception of work under an RSAA).
<input type="checkbox"/> Federal or Other Regulations <input type="checkbox"/> DOE Directives <input type="checkbox"/> Consensus Standards (i.e. ANSI, ASTM) LANL Requirements: <input type="checkbox"/> Policy/Procedure Change <input type="checkbox"/> Notices <input type="checkbox"/> Corrective Action Plan <input checked="" type="checkbox"/> Qualification Standard <input type="checkbox"/> Other (specify)	Title: RP-PROG procedure RP-SOP-006  Specific Citation: 4.2.4 On-the-Job Training (OJT) and Practical Evaluations  (1) The LANL RCT training program shall consist of the following task evaluations: <ul style="list-style-type: none"> <li>• Curriculum 116 OJTs</li> <li>• Practical Evaluations</li> </ul>
<input checked="" type="checkbox"/> Attach the analysis plan or briefly describe the analysis process used.	
See Radiation Protection Training Development Program (RPTDP) table-top discussion performed on 8/10/2020	
<input checked="" type="checkbox"/> Attach the analysis results or list the duties and tasks.	
See RCT job task analysis validation performed on 8/8/2017	
<input checked="" type="checkbox"/> Courses at LANL or in the DOE complex that were reviewed and <u>ARE</u> relevant to this course	
Radiological Considerations for First Aid Course # 8781 Personnel Decontamination Course # 8780 RCT Continuing Training 1 <sup>st</sup> Quarter 2020 Course # 47986	
<input checked="" type="checkbox"/> List any lessons learned or incidents relevant to this course	
RP-LL-0036, <i>Contamination Boundary Control During Radiological Emergency Response</i>	
<input checked="" type="checkbox"/> List the names and title of personnel interviewed regarding course content (requester, managers, subject matter experts, expert performers, etc.)	
Keith Luna – RP- PROG Team Leader	

Matthew Hill – RP Training Coordinator Matthew Cheatham – Health Physicist Timothy Vance – Health Physics Field Coordinator			
Design			
Course Level Determination			
<input type="checkbox"/> Level 1 – Awareness	<input checked="" type="checkbox"/> Level 2 – Knowledge	<input type="checkbox"/> Level 3 – Application	<input type="checkbox"/> Level 4 – Mastery, Expert
Delivery Method			
<input type="checkbox"/> Web-based <input checked="" type="checkbox"/> Classroom <input type="checkbox"/> OJT <input checked="" type="checkbox"/> Other – RP Practical Facility			
<input checked="" type="checkbox"/> Terminal Objective – Given a pre-determined scenario, perform the initial responses to radiological emergencies in accordance with P121 <i>Radiation Protection</i> and RP-PROG-TP-201 <i>Radiological Emergency Response</i> .			
<input checked="" type="checkbox"/> Enabling Objectives –  EO1: Determine the need for delivering emergency exposure briefings EO2: Classify medical injuries EO3: Perform initial actions and notifications EO4: Perform radiological assessments EO5: Prepare egress pathways for emergency response personnel EO6: Deliver radiological briefing to emergency response personnel EO7: Control the spread of contamination EO8: Complete radiological documentation following an emergency EO9: Demonstrate the initial response to an Area Radiation Alarm (ARM) EO10: Demonstrate the initial response to a Continuous Air Monitor (CAM) alarm without respiratory protection EO11: Demonstrate the initial response to a Continuous Air Monitor (CAM) alarm with respiratory protection EO12: Demonstrate the initial response to an Electronic Personnel Dosimeter (EPD) Alarm EO13: Demonstrate the initial response to a Stationary Contamination Monitor Alarm EO14: Demonstrate the initial response to a toxic radiological spill			
<input checked="" type="checkbox"/> Evaluation Criteria <input checked="" type="checkbox"/> Level I <input checked="" type="checkbox"/> Level II <input type="checkbox"/> Quiz <input type="checkbox"/> Test <input type="checkbox"/> Performance <input type="checkbox"/> Other – provide details			
Development			
<input checked="" type="checkbox"/> Attach Lesson Plan  <input checked="" type="checkbox"/> Include the following: <ul style="list-style-type: none"> <li>• Dynamic Learning Activity (DLA), <i>Radiological Emergency Response, Course # 50442</i></li> <li>• DLA Scenario, <i>Radiological Emergency Response</i></li> <li>• Training Radiological Work Permit (RWP)</li> <li>• RP-FORM-114 – Survey Data</li> <li>• Injury classification lamination cards</li> <li>• RP-LL-0036, <i>Contamination Boundary Control During Emergency Response</i></li> <li>• RP-FORM-018, <i>On-Scene Radiological Emergency Briefing</i></li> <li>• Evaluation Sheet. <i>Radiological Emergency Response, Course # 50442</i></li> <li>• Evaluation Scenario –<i>Evaluator Form. Radiological Emergency Response, ER-01</i></li> <li>• Evaluation Scenario –<i>Student Form. Radiological Emergency Response, ER-01</i></li> </ul>			

<ul style="list-style-type: none"><li>• Evaluation Radiological Work Permit (RWP)</li><li>• RP-FORM-114 Survey – Survey Data</li><li>• RMI Spreadsheet</li><li>• RP-FORM-036, <i>Personnel Contamination Form</i></li><li>• RP-PROG-TP-201, <i>Radiological Emergency Response</i></li><li>• P 121, <i>Radiation Protection, Chapter 2, Response to Radiological Emergencies and Incidents</i></li></ul>
<input checked="" type="checkbox"/> Pilot session, see attached <ul style="list-style-type: none"><li>• 06/22/20 – 06/26/20</li><li>• Describe results: Feedback from students and instructor was gathered to find areas which can be improved</li><li>• Actions taken based on feedback: see attached feedback form</li></ul>
<b>Implementation</b>
<input checked="" type="checkbox"/> Documentation <ul style="list-style-type: none"><li>• RP-PROG Level 1 Evaluation Form</li></ul>
<b>Evaluation</b>
<input checked="" type="checkbox"/> Level I: A level 1 evaluation form was given to students for feedback to better improve future revisions.
<input checked="" type="checkbox"/> Level II: Practical Evaluation Radiological Emergency Response (ER-01)  Requirements for completion of practical evaluation: <ul style="list-style-type: none"><li>• Received a final score of <math>\geq 80\%</math> on Practical Evaluation</li><li>• All critical objectives are completed successfully</li><li>• Standards for acceptable responses are found within DLA</li><li>• All missed objectives documented by evaluator comments</li></ul>

**Organization Name**  
RP-PROG

**Course Title**  
Radiological Posting

**Course Number**  
52058

**Revision Number**  
1.0

Developer	<u>Justin Gillilan</u> Developer Name ( <i>print</i> )	<u>Justin Gillilan</u> Digitally signed by Justin Gillilan Date: 2022.02.25 06:51:36 -07'00'	<u>02/25/22</u> Date
Subject Matter Review	<u>Matthew Hill</u> Subject Matter Expert ( <i>print</i> )	<u>MATTHEW HILL (Affiliate)</u> Digitally signed by MATTHEW HILL (Affiliate) Date: 2022.06.02 09:39:37 -06'00'	<u>06/02/2022</u> Date
Approval	<u>Keith Luna</u> FOD/Programmatic Representative ( <i>print</i> )	<u>KEITH LUNA (Affiliate)</u> Digitally signed by KEITH LUNA (Affiliate) Date: 2022.06.06 09:08:03 -06'00'	<u>6/6/2022</u> Date

**This document does not contain scientific or technical information  
DUSA Designator: RADPRO**

## Systematic Approach to Training Checklist

Course Title: Radiological Posting		
Course Number: 52058	Revision # 1.0	Date 02/15/22
Developer: Justin Gillilan		
Requester of Training: RP-PROG		
Description of Training Request: Initial Training for Radiological Control Technicians (RCTs) designed to meet the practical training requirements of DOE-HDBK-1122-2009.		
Target Audience Analysis: RCTs		

Analysis	
Course Drivers:	
<input checked="" type="checkbox"/> Federal or Other Regulations <input type="checkbox"/> DOE Directives <input type="checkbox"/> Consensus Standards (i.e. ANSI, ASTM) LANL Requirements: <input type="checkbox"/> Policy/Procedure Change <input type="checkbox"/> Notices <input type="checkbox"/> Corrective Action Plan <input type="checkbox"/> Qualification Standard <input type="checkbox"/> Other (specify)	<p>Title: 10 CFR 835 - <i>OCCUPATIONAL RADIATION PROTECTION</i></p> <p>Specific Citation: §835.901 (a), (c) Radiation safety training</p> <p>(a) Each individual shall complete radiation safety training on the topics established at §835.901(c) commensurate with the hazards in the area and the required controls:</p> <p>(c) Radiation safety training shall include the following topics, to the extent appropriate to each individual's prior training, work assignments, and degree of exposure to potential radiological hazards:</p> <ol style="list-style-type: none"> <li>(1) Risks of exposure to radiation and radioactive materials, including prenatal radiation exposure;</li> <li>(2) Basic radiological fundamentals and radiation protection concepts;</li> <li>(3) Physical design features, administrative controls, limits, policies, procedures, alarms, and other measures implemented at the facility to manage doses and maintain doses ALARA, including both routine and emergency actions</li> <li>(4) Individual rights and responsibilities as related to implementation of the facility radiation protection program;</li> <li>(5) Individual responsibilities for implementing ALARA measures required by §835.101; and</li> <li>(6) Individual exposure reports that may be requested in accordance with §835.801.</li> </ol>

<input type="checkbox"/> Federal or Other Regulations <input type="checkbox"/> DOE Directives <input type="checkbox"/> Consensus Standards (i.e. ANSI, ASTM) LANL Requirements: <input type="checkbox"/> Policy/Procedure Change <input type="checkbox"/> Notices <input type="checkbox"/> Corrective Action Plan <input type="checkbox"/> Qualification Standard <input checked="" type="checkbox"/> Other (specify): DOE Handbook	Title: DOE-HDBK-1122-2009  Specific Citation: Phase II – Practical Training  Phase I academic objectives provide the bases for skills and tasks to be performed in Phase II. Practical training utilizes a mixture of classroom and hands-on training. RCTs are taught to apply academic knowledge to the site-specific tasks.  (a) The practical phase consists of two parts: training and evaluation. Further guidance on the development and conduct of practical training and evaluation is given in the “Practical Training Guide” section of this program.
<input type="checkbox"/> Federal or Other Regulations <input type="checkbox"/> DOE Directives <input type="checkbox"/> Consensus Standards (i.e. ANSI, ASTM) LANL Requirements: <input checked="" type="checkbox"/> Policy/Procedure Change <input type="checkbox"/> Notices <input type="checkbox"/> Corrective Action Plan <input type="checkbox"/> Qualification Standard <input type="checkbox"/> Other (specify)	Title: LANL Procedure P-121 Radiation Protection Procedure  Specific Citation: §832 (3)  (3) All RCTs must be trained, qualified, and requalified in accordance with RP requirements. This applies to all regular employees and subcontractors performing RCT activities (with the exception of work under an RSAA).
<input type="checkbox"/> Federal or Other Regulations <input type="checkbox"/> DOE Directives <input type="checkbox"/> Consensus Standards (i.e. ANSI, ASTM) LANL Requirements: <input type="checkbox"/> Policy/Procedure Change <input type="checkbox"/> Notices <input type="checkbox"/> Corrective Action Plan <input checked="" type="checkbox"/> Qualification Standard <input type="checkbox"/> Other (specify)	Title: RP-PROG-QS-002, <i>Qualification Standard, Radiological Control Technician</i>  Specific Citation: 5.5.3 Operational Evaluations  (1) The RCT training program shall consist of the following Operational Evaluations: <ul style="list-style-type: none"> <li>• On-the-Job Training Evaluations</li> <li>• Practical Training Evaluations</li> </ul>
<input checked="" type="checkbox"/> Attach the analysis plan or briefly describe the analysis process used.	
RP-PROG-QS-002, <i>Qualification Standard Radiological Control Technician</i> , Attachment 1- Needs Analysis Report	
<input checked="" type="checkbox"/> Attach the analysis results or list the duties and tasks.	
RP-PROG-QS-002, <i>Qualification Standard Radiological Control Technician</i> , Attachment 2- Job Task Analysis Report	
<input checked="" type="checkbox"/> Courses at LANL or in the DOE complex that were reviewed and <u>ARE</u> relevant to this course	
Course # 20301, Radiological Worker II Course # 50065, RCT - RP-PROG-TP-200 Radiation Protection Manual (RPM) Overview Course # 17590, Radiological Postings Overview	
<input checked="" type="checkbox"/> List any lessons learned or incidents relevant to this course	
LANL-2017-402, <i>TA-3-40-S131 Radiological Posting Prematurely Removed</i> LANL-2019-2184, <i>Radiological Posting Moved Ahead of Visit</i> LANL-2018-1070, <i>Worker Entered a Posted Contamination Area Without the Proper PPE and Had Not Been Briefed on the RWP</i>	

<input checked="" type="checkbox"/> List the names and title of personnel interviewed regarding course content (requester, managers, subject matter experts, expert performers, etc.)			
Keith Luna – RP- PROG Team Lead Training Matthew Hill – RP-PROG Training Coordinator Justin Gillilan – Health Physicist Patrick O’Sullivan – Health Physicist Timothy Vance – Health Physics Field Coordinator James Mang – Health Physics Field Coordinator Bryan Bonser – Health Physics Field Coordinator Kevin Sadowsky – Health Physics Field Coordinator			
Design			
Course Level Determination			
<input type="checkbox"/> Level 1 – Awareness	<input checked="" type="checkbox"/> Level 2 – Knowledge	<input type="checkbox"/> Level 3 – Application	<input type="checkbox"/> Level 4 – Mastery, Expert
Delivery Method <input type="checkbox"/> Web-based <input checked="" type="checkbox"/> Classroom <input type="checkbox"/> OJT <input checked="" type="checkbox"/> Other – RP Practical Facility			
<input checked="" type="checkbox"/> Terminal Objective – TO1: Given the need to post radiological areas, RCTs will establish radiological postings in accordance with P121, <i>Radiation Protection</i> , RP-PROG-TP-200, <i>Radiation Protection Manual</i> , and RP-1-Sign-19, <i>Radiological Posting Catalog</i> .			
<input checked="" type="checkbox"/> Enabling Objectives – EO1: Determine applicable posting limits for radiation, contamination, and airborne hazards EO2: Identify required levels of control for posted areas EO3: Post an area for radiological hazards EO4: Down-post area for radiological hazards EO5: Respond to a posting violation			
<input checked="" type="checkbox"/> Evaluation Criteria <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Level I</li> <li><input checked="" type="checkbox"/> Level II</li> <li><input type="checkbox"/> Quiz</li> <li><input type="checkbox"/> Test</li> <li><input type="checkbox"/> Performance</li> <li><input type="checkbox"/> Other – provide details</li> </ul>			
Development			
<input checked="" type="checkbox"/> Attach Lesson Plan			
<input checked="" type="checkbox"/> Include the following: <ul style="list-style-type: none"> <li>• Dynamic Learning Activity (DLA), <i>Radiological Posting</i></li> <li>• Dynamic Learning Activity (DLA) Scenario, <i>Radiological Posting, RP-01</i></li> <li>• Practical Evaluation – <i>Radiological Posting</i></li> <li>• Practical Evaluation Scenario – Student, <i>Scenario ID: RP-01</i></li> <li>• Radiological Posting Practice Worksheet</li> </ul>			
<input checked="" type="checkbox"/> Pilot session, see attached 08/24/20 – 08/28/20 <ul style="list-style-type: none"> <li>• Describe Results: Feedback from students and instructor was gathered to find areas which can be improved</li> <li>• Actions taken based on feedback: see attached feedback form</li> </ul> 01/31/2022 <ul style="list-style-type: none"> <li>• RP-PROG Practical Training Instructors reviewed training material for impact of new facility configuration and projected training schedule</li> </ul>			

- All incorporated changes are listed in *SAT Lesson Plan, Table 1 Revision History* (attached).

### Implementation

#### ☒ Documentation

- RP-PROG Level 1 Evaluation Form
- P121, *Radiation Protection, Revision 6*
- RP-PROG-TP-200, *RP Manual, Attachment 7, Revision 1.1*
- RP-PROG-TP-201, *Radiological Emergency Response, Revision 1*
- RP-1-Sign-19, *Radiological Posting Catalog, Revision 6*
- RP-PROG-FORM-114, *Radiological Survey – External Radiation/Contamination Form, Revision 1*

### Evaluation

☒ Level I: A level I evaluation form was given to students for feedback to better improve future revisions

☒ Level II: Practical Evaluation Scenario – Radiological Posting

Requirements for completion of practical evaluation:

- Receive a final score of  $\geq 80\%$  on Practical Evaluation
- All critical objectives are completed successfully
- Standards for appropriate responses are found within DLA
- All missed points documented by evaluator comments

Or

Satisfactory completion of the *Radiological Posting* section of a Comprehensive Practical Assessment



**Organization Name**  
RP-PROG

**OJT Course Title**  
RCT: Micro-Rem Meters

**Course Number**  
43119

**Revision Number**  
2.0

Developer	<u>Timothy Vance</u> <i>Developer</i>	<u>TIMOTHY VANCE</u> (Affiliate) <small>Digitally signed by TIMOTHY VANCE (Affiliate) Date: 2022.04.18 10:12:26 -06'00'</small>	<u>Signature</u>	<u>Date</u>
Subject Matter Review	<u>Justin Gillilan</u> <i>Subject Matter Expert</i>	<u>Justin Gillilan</u> <small>Digitally signed by Justin Gillilan Date: 2022.04.18 10:42:43 -06'00'</small>	<u>Signature</u>	<u>Date</u>
Approval	<u>Keith Luna</u> <i>RP Programs Team Leader</i>	<u>KEITH LUNA</u> (Affiliate) <small>Digitally signed by KEITH LUNA (Affiliate) Date: 2022.04.18 12:30:19 -06'00'</small>	<u>Signature</u>	<u>Date</u>

**This document does not contain scientific or technical information  
DUSA Designator: RADPRO**

**NOTE**

This document contains instructions for all three OJT training roles: Instructor, Trainee, and Evaluator.

Section 1, ***OJT Instructor Guide***, provides information for developing and teaching OJT.

Section 2, ***OJT Trainee Guide***, contains everything a trainee needs to prepare for training and evaluation.

Section 3, ***OJT Evaluator Guide***, provides rules and guidelines to evaluate a trainee properly.

Section 4, ***Trainee Evaluation*** of OJT Instruction and Evaluation.

Section 5, ***Unsatisfactory OJT Evaluation*** with Remediation Steps.

**Revision Log**

Rev. No.	Date	Description of Change
0.0	11/7/2018	Initial release
1.0	2/20/2020	Removed the perform a survey requirement
2.0	4/5/2022	Revised OJT templates to improve LP information and updated procedural revisions

## Section 1: OJT Instructor Guide

This *OJT Instructor Guide* provides all the information you need in order to understand the following:

- OJT Instructor and Evaluator Qualifications
- OJT Instruction Checklist
- OJT Lesson Plan

### OJT Instructor and Evaluator Qualifications

1. OJT instructors and evaluators must meet the following criteria:
  - Completed TSQP: OJT Instructor/Evaluator training requirements (Curriculum 411: TSQP—OJT Instructor/Evaluator)
2. SMEs cannot develop OJT instructional material unless they meet one of the two requirements below:
  - They have completed the appropriate instructional TSQP development courses (Curriculum: 409—TSQP Training Specialist [nonnuclear facility] or 10484: TSQP—Training Specialist [nuclear facility]) or
  - A qualified training specialist, training manager, or organizational representative reviews and approves the lesson plan.
3. An OJT instructor/evaluator is limited to training/evaluating no more than three trainees at a time. To exceed the limit for the trainee-to-instructor ratio, the responsible line manager, or designee, with advice from the instructor and operations workers, approves an appropriate ratio and documents the ratio in the *OJT Lesson Plan* or in a separate memorandum for special circumstances.

**Note:** *Candidates for certification in nuclear facilities must receive one-on-one OJT instruction with the exception of a student to instructor ratio of up to a 12 to 1 as set forth in RP memorandum RP-18-028.*

### OJT Lesson Plan

The lesson plan itself is divided into three training sections: introduction, body, and conclusion. Ensure that you cover all material in the order indicated and remember to review and apply the training techniques that you learned during your TSQP instruction. During training, you can say the italicized wording *verbatim* or use similar wording that is more natural to you. In addition, remember to provide information for items that are **[bold and inside brackets]**.

#### Introduction

- Brief Building Emergency Plan
- Provide an overview for the OJT instruction and evaluation process – **Prepare** (review of applicable procedures), **Practice** (Instructor guided practice and demonstrations), and **Present** (independent OJT evaluations)
- Ensure students have copies of the following materials (most current revision on EDRMS):
  - a. RP-1-DP-59, Micro-Rem Meters
  - b. RP-1-DP-27, Operational Checks of Beta/Gamma Survey Instruments
  - c. RP-PROG-FORM-041, Instrument Check Tag

## **Body**

- **Procedure Review** – RP-1-DP-59 and RP-1-DP-27. Review with students and ensure the following topics are emphasized:
  - a. Operational Characteristics of the Micro-Rem Meters (RP-1-DP-59, p. 1/App. A)
    - Types of radiation detected – Gamma and X-ray
    - Ranges of detector: 0-20  $\mu\text{rem/hr}$ , 0-200  $\mu\text{rem/hr}$ , 0-2,000  $\mu\text{rem/hr}$ , 0-20,000  $\mu\text{rem/hr}$ , and 0-200,000  $\mu\text{rem/hr}$  (0-200 mrem/hr excels at measurements < 1 mrem/hr)
    - Energy ranges of detector – 40 keV to 1.3 MeV or 17 keV to 1.3 MeV with low-density window option
    - Type of detector – Scintillation
    - Lower detection limit – 10  $\mu\text{rem/hr}$  in a background of < 20  $\mu\text{rem/hr}$
  - Field Maintenance (RP-1-DP-59, section 3.1)
    - Types of batteries in use – two/three 9-volt batteries, depending on the meter
    - Note that the rubber pad must be located under the batteries
  - b. Operational Checks of the Micro-Rem Meters (RP-1-DP-27, section 4.4)
    - Explain the circumstances in which routine response checks are required
  - c. Operation of the Micro-Rem Meters (RP-1-DP-59, sections 2.0 and 3.2)
    - Determine MDA using Table 1
    - Instrument is sensitive to beta and neutron radiation
- **OJT Task Demonstration**
  - Demonstrate all required performance steps
  - Quiz students on knowledge questions
  - INSTRUCTOR: Perform 9-Volt Battery Replacement
  - SAFETY: Anti-contamination gloves must be worn when handling radioactive sources

## **Conclusion**

- Review learning objectives with students
- Summarize key concepts and required steps for OJT evaluation
- **Ask trainees to complete the attached OJT Course Evaluation (Section 4).**
- Following the completion of OJT evaluation ensure copies are stored in the student's electronic and physical personnel files

## Section 2: OJT Trainee Guide

This *OJT Trainee Guide* provides all the information you need in order to understand the following:

- Prerequisites
- The OJT Instruction and Evaluation Process
- Related Documents (questions and performances are based on these)
- PPE, Equipment, and Training Aids
- Objectives (what you will know or be able to do)
- Safety and Knowledge Questions and Answers (including Safety Basis, TSR, and/or DSA questions, if applicable)
- Task Performance Steps

### Prerequisites

Prior to this training, you must have successfully completed, or be enrolled in, the following training requirements:

- Curriculum 116, *Radiological Control Technician Requirements*

If you have **not** met these prerequisites, notify your supervisor, training coordinator, or training administrator, and complete the prerequisites.

### The OJT Instruction and Evaluation Process

An instructor will provide you with an *OJT Trainee Guide* for each OJT lesson. Before starting your instruction, you must read the remainder of this *OJT Trainee Guide*. Write down any questions that you have and bring them to the OJT training session.

**During the instruction process, the suggestions below will help you succeed in learning the material:**

- Ask your instructor questions in order to understand what you need to learn. When in doubt, ask!
- Ask for coaching and repeated demonstrations at any time during your instruction.
- Bring your *OJT Trainee Guide* to training sessions and refer to performance steps, safety and knowledge questions, and other related information as often as you like.
- Practice all performance activities for as long as you need to, until you feel comfortable doing the tasks.
- Ensure that you know and understand all the safety and knowledge questions in your *OJT Trainee Guide*. You will be asked these questions verbatim during your evaluation.

**During your evaluation, the following rules apply:**

- You may use your reference materials (such as procedures) during the evaluation, but you may **not** use your *OJT Trainee Guide*.
- The evaluator cannot answer any questions or coach you.
- Perform each task in accordance with the appropriate training/reference materials.
- In the event any problems arise beyond your knowledge and skills, step back and allow the evaluator to take control.
- Your performance criteria are as follows:
  - Failing to respond correctly to a safety-related question (including Safety Basis, Technical Safety Requirement [TSR], and/or Documented Safety Analysis [DSA] questions, if applicable) is an automatic failure of this evaluation. Safety questions require 100% accuracy.

- You must successfully respond to all knowledge questions 80% or better.
- Incorrectly **performing** any **critical step** or two (2) non-critical steps constitutes a failure of this evaluation.
- A **critical step** in a performance demonstration is defined as a step that, if incorrectly performed or performed in the wrong order, may cause the following: personnel injury or a safety issue; equipment damage or cause a TSR and/or; significant recovery time.
- The OJT evaluator **must** record any error serious enough to warrant discontinuing the training session or a failure of a task/subtask evaluation.

### Related Documents

RELATED DOCUMENTS
<p>The documents below provide the basis for all knowledge and safety questions, as well as performance of tasks.</p> <ul style="list-style-type: none"><li>• RP-1-DP-59, Micro-Rem Meters</li><li>• RP-1-DP-27, Operational Checks of Beta/Gamma Survey Instruments</li><li>• RP-PROG-FORM-041, Instrument Check Tag</li></ul>

### Objectives

OBJECTIVES
<p>Terminal Objectives:</p> <p>TO1: Given the need to operate Micro-Rem Meters, perform the initial setup in accordance with RP-1-DP-59, <i>Micro-Rem Meters</i></p>
<p>Enabling Objectives:</p> <p>EO1: Perform the operational (functional) checks for Micro-Rem Meters</p> <p>EO2: Initiate Instrument Check Tags for Micro-Rem Meters</p> <p>EO3: State the circumstances in which a routine response check is required for Micro-Rem Meters</p> <p>EO4: Determine the Minimum Detectable Activity (MDA) for Micro-Rem Meters</p>

*Note: In order to complete this form, the OJT evaluator must initial in the Sat. or Unsat. columns as appropriate.*

### Task Performance Steps

#### P1: Perform Operational (functional) and Response Checks for the Micro-Rem Meter.

**EVALUATOR:** Ask the Trainee to “Perform an initial setup for the Micro-Rem Meter.”

Performance Step	Sat.	Unsat.
<b>P1.1: Perform operational checks (functional checks) for the Micro-Rem Meter.</b> (RP-1-DP-27 and RP-1-DP-59) Acceptable performance: <ul style="list-style-type: none"> <li>RP-1-DP-27, 4.1, steps: 1-3</li> <li>RP-1-DP-59, 3.1, steps 1-2: Verify “bat” and “HV ok”</li> </ul>		
<b>P1.2: Establish response check data for the Micro-Rem Meter.</b> (RP-1-DP-27) Acceptable Response: <ul style="list-style-type: none"> <li>Section 4.3, steps: 1-6</li> <li>Section 4.4, steps: 1-6</li> <li>Properly fills out all applicable information on RP-1-FORM-041</li> </ul> <b>Safety: Gloves must be worn when handling sources</b>		
<b>K1.1: When is a response check of the Micro-Rem Meter required?</b> (RP-1-DP-27, section 4.4) Acceptable performance: <ul style="list-style-type: none"> <li>Prior to the first use of the day or shift</li> <li>During intermittent use conditions</li> <li>Several times a day during continuous use</li> </ul>		
<b>P1.3: Determine the MDA for the Micro-Rem Meter.</b> (RP-1-DP-59) <u>Evaluator shall provide the trainee with beta results in <math>\mu\text{rem/hr}</math></u> Acceptable performance: <ul style="list-style-type: none"> <li>Section 3.2, table 1.</li> </ul>		

(S)

When the trainee completes the ***instructional*** portion of this on-the-job training, both the instructor and the trainee must sign at the same time and date. When the trainee completes all **evaluation**, both the evaluator and the trainee must sign at the same time and date. (If more than one instructor or evaluator is involved, add names and signatures.)

Trainee Name (print):	Z#:
Trainee Post-Instruction Signature:	Date:
Trainee Post-Evaluation Signature:	Date:
Instructor Name (print):	Z#:
Instructor Signature:	Date:
Evaluator Name (print):	Z#:
Evaluator Signature:	Date:

## Section 3: OJT Evaluator Guide

This *OJT Evaluator Guide* provides all the information you need in order to understand the following:

- Instructions to the OJT Evaluator
- Evaluation criteria
- *Unsatisfactory OJT Evaluation with Remediation Steps* form (section 5)

### Instructions to the OJT Evaluator

#### CAUTION

**DO NOT ALLOW TRAINEE TO MAKE AN ERROR THAT WOULD PUT PERSONNEL, EQUIPMENT, THE ENVIRONMENT, OR THE FACILITY IN JEOPARDY AT ANY TIME DURING THIS EVALUATION.**

- ☐ Review evaluation rules with the trainee and ask if there are any questions before beginning the evaluation.
- ☐ During the evaluation, do not allow the worker to ask questions; do not coach the worker in any way. The worker may consult reference materials (**except** the *OJT Trainee Guide*) at any time during the performance evaluation but may not ask you to clarify on any task or item.

#### NOTE

The evaluator may require the trainee to talk through a performance step before performing it. The evaluator must take care not to agree or disagree with the trainee's statements; this would be coaching. However, an exact repeat-back is not coaching.

In cases where evaluation will involve the use of radioactive sources, utilize the following methods in the priority listed below.

1. Use actual sources.
2. Use Teletrix or other instrument simulators.
3. Supply the trainee with simulated source values.

- During the performance evaluation, ask safety and knowledge questions **verbatim**, including Safety Basis, TSR, and DSA questions, if applicable. Evaluate only knowledge and safety questions, as well as performance steps, that are included in the *OJT Trainee Guide*.
- As a trainee responds/performs acceptably to a question or performance task, write your initials in the "Sat." column. When every item is a "Sat.", submit the completed copy to your training coordinator or training administrator.
- If a trainee fails to answer safety/knowledge questions, or performs tasks/subtasks improperly, write your initials in the "Unsat." column. For all failures, you must complete the *Unsatisfactory OJT Evaluation with Remediation Steps* form (section 5) and submit it to the instructor as well as to your training coordinator or training administrator for recordkeeping purposes.

### Evaluation Criteria

Evaluate the trainee using the criteria below.

- If a trainee responds incorrectly to a safety-related question it is an automatic failure of this evaluation. Safety questions require 100% accuracy (including Safety Basis, TSR, and/or DSA questions, if applicable).
- The trainee must successfully respond to all knowledge questions with 80% or better accuracy.
- Incorrectly **performing** one (1) critical step or two (2) non-critical steps constitutes a failure of this evaluation.
- A **critical step** in a performance demonstration is defined as a step that, if incorrectly performed or performed in the wrong order, may cause the following: personnel injury or a safety issue; equipment damage or cause a Technical Safety Requirement/Review (TSR), and/or; significant recovery time.

**After completion of the OJT; The Evaluator shall complete the following for credit and record retention:**

- 1) Make a copy of the original record and retain at the facility. All OJT records will transfer with the RCT.
- 2) Email a scanned copy of the OJT to [RCT-OJT@lanl.gov](mailto:RCT-OJT@lanl.gov)
  - a. [The email must contain a complete copy of Sections 2 and 4 for credit.](#)
  - b. A copy of section 5 must also be included in cases where remediation is required.

Send the ORIGINAL record to the RP-PROG Group Admin office, MS K788.

Please take the time to complete the following course evaluation after you have completed the OJT performance evaluation. Your feedback is important to assist us with the effectiveness of this course.

OJT #43119	Title: Micro-Rem Meters
Date:	Instructor:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. This OJT was a good use of my time.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. This OJT will enable me to perform this task safely and correctly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. The learning objectives found in this OJT were appropriate to the task being trained.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. The performance evaluation portion of this OJT was effective at measuring how much I learned during the instructional portion of the OJT.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Rate your level of knowledge:	Low				High
Before the OJT instruction and evaluation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
After the OJT instruction and evaluation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If you marked “Disagree” or “Strongly Disagree” to any of the above, please let us know why (in detail):

---

What changes would you recommend to make to this OJT course more effective?

## Unsatisfactory OJT Evaluation with Remediation Steps

Task or Question #	Reason for failure	Remediation steps

Course Title: Micro-Rem Meters	OJT #: 43119
Trainee Name (print):	Z #:
Signature:	Date:
Evaluator Name (print):	Z #:
Signature:	Date:

1. **THE TRAINEE MAY NOT PERFORM THE OJT TRAINEE GUIDE TASKS IN HIS/HER JOB UNTIL PASSING THE EVALUATION FOR THOSE TASKS.** The only exception is if he/she is supervised directly by a person qualified for those tasks.
2. The evaluator must provide remediation according to the above "Remediation Steps." When ready, the trainee must be evaluated a second time. This process continues until the trainee passes the evaluation.
3. Submit this form to the appropriate training coordinator or training administrator to file the original in the trainee's training records.



**Organization Name**  
RP-PROG

**OJT Course Title**  
RCT: Eberline Teletector

**Course Number**  
43120

**Revision Number**  
2.0

Developer	<u>Timothy Vance</u> <i>Developer</i>	<u>TIMOTHY VANCE</u> (Affiliate) <small>Digitally signed by TIMOTHY VANCE (Affiliate) Date: 2022.05.02 09:40:04 -06'00'</small>	<u>Signature</u>	<u>                    </u> <i>Date</i>
Subject Matter Review	<u>Justin Gillilan</u> <i>Subject Matter Expert</i>	<u>Justin Gillilan</u> (Affiliate) <small>Digitally signed by Justin Gillilan Date: 2022.05.02 15:36:08 -06'00'</small>	<u>Signature</u>	<u>                    </u> <i>Date</i>
Approval	<u>Keith Luna</u> <i>RP Programs Team Leader</i>	<u>KEITH LUNA</u> (Affiliate) <small>Digitally signed by KEITH LUNA (Affiliate) Date: 2022.05.02 15:39:28 -06'00'</small>	<u>Signature</u>	<u>                    </u> <i>Date</i>

**This document does not contain scientific or technical information  
DUSA Designator: RADPRO**

#### NOTE

This document contains instructions for all three OJT training roles: Instructor, Trainee, and Evaluator.

Section 1, ***OJT Instructor Guide***, provides information for developing and teaching OJT.

Section 2, ***OJT Trainee Guide***, contains everything a trainee needs to prepare for training and evaluation.

Section 3, ***OJT Evaluator Guide***, provides rules and guidelines to evaluate a trainee properly.

Section 4, ***Trainee Evaluation of OJT Instruction and Evaluation***.

Section 5, ***Unsatisfactory OJT Evaluation with Remediation Steps***.

#### Revision Log

Rev. No.	Date	Description of Change
1.0	10/31/2018	Initial release
2.0	4/18/2022	Revised OJT templates to improve LP information and updated procedural revisions

## Section 1: OJT Instructor Guide

This *OJT Instructor Guide* provides all the information you need in order to understand the following:

- OJT Instructor and Evaluator Qualifications
- OJT Instruction Checklist
- OJT Lesson Plan

### OJT Instructor and Evaluator Qualifications

1. OJT instructors and evaluators must meet the following criteria:
  - Completed TSQP: OJT Instructor/Evaluator training requirements (Curriculum 411: TSQP—OJT Instructor/Evaluator)
2. SMEs cannot develop OJT instructional material unless they meet one of the two requirements below:
  - They have completed the appropriate instructional TSQP development courses (Curriculum: 409—TSQP Training Specialist [nonnuclear facility] or 10484: TSQP—Training Specialist [nuclear facility]) or
  - A qualified training specialist, training manager, or organizational representative reviews and approves the lesson plan.
3. An OJT instructor/evaluator is limited to training/evaluating no more than three trainees at a time. To exceed the limit for the trainee-to-instructor ratio, the responsible line manager, or designee, with advice from the instructor and operations workers, approves an appropriate ratio and documents the ratio in the *OJT Lesson Plan* or in a separate memorandum for special circumstances.

**Note:** *Candidates for certification in nuclear facilities must receive one-on-one OJT instruction with the exception of a student to instructor ratio of up to a 12 to 1 as set forth in RP memorandum RP-18-028.*

### OJT Lesson Plan

The lesson plan itself is divided into three training sections: introduction, body, and conclusion. Ensure that you cover all material in the order indicated and remember to review and apply the training techniques that you learned during your TSQP instruction. During training, you can say the italicized wording *verbatim* or use similar wording that is more natural to you. In addition, remember to provide information for items that are **[bold and inside brackets]**.

#### Introduction

- Brief Building Emergency Plan
- Provide an overview for the OJT instruction and evaluation process – **Prepare** (review of applicable procedures), **Practice** (Instructor guided practice and demonstrations), and **Present** (independent OJT evaluations)
- Ensure students have copies of the following materials:
  - a. RP-1-DP-56, Eberline Teletectors
  - b. RP-1-DP-27, Operational Checks of Beta/Gamma Survey Instruments
  - c. RP-1-Form-34, Beta/Gamma Survey Instrument Performance Test Log
  - d. RP-PROG-FORM-041, Instrument Check Tag

## Body

- **Procedure Review** – RP-1-DP-56, RP-1-DP-27, and RP-1-Form-34. Review with students and ensure the following topics are emphasized:
  - a. Operational Characteristics of the Eberline Teletectors (RP-1-DP-56, sections 1/7)
    - Types of radiation detected – Gamma
    - Ranges of detector – 0-2 mR/hr, 0-50 mR/hr, 0-2 R/hr, and 0-1,000 R/hr
    - Number of detectors – two: one low range, one high range. Low range is the outer detector and high range is inner detector.
    - Type of detector – Geiger-Mueller
  - Field Maintenance (RP-1-DP-56, section 5)
    - Types of batteries in use – four 'C' cell batteries
    - May be performed by RCT, unscrew the handle
  - b. Operational Checks of the Eberline Teletectors (RP-1-DP-56, section 3.1, RP-1-DP-27 and RP-PROG-FORM-34)
    - Care not to twist when extending/retracting the Teletector
    - Explain differences between performance tests and routine response checks
    - Establishing Reference Readings – When is this required?
  - c. Operation of the Eberline Teletectors (RP-1-DP-56 section 4)
    - Emphasize how a GM is qualitative not quantitative. Cannot be used for official surveys
    - Smallest scale division on lowest scale is 0.01 mR/hr
    - The Teletector responds to beta radiation but should not be used to quantify it
- **OJT Task Demonstration**
  - Demonstrate all required performance steps
  - Quiz students on knowledge questions
  - **INSTRUCTOR: Demonstrate Battery Change**
  - Utilize a Sr-90 Calibrator or Cs-137\* button source and DU slug or simulated source to perform all measurements for Reference Readings and Response Checks and complete RP-1-Form-34
    - **SAFETY: Anti-contamination gloves must be worn when handling radioactive sources**
    - *\*RP-1-DP-27, 4.2.7 - If it is not possible to use the Sr-90 calibrator for a specific type of instrument or a desired instrument range, then another check source should be used to establish the reference readings. The source and detector geometry must be constant and reproducible.*

## Conclusion

- Review learning objectives with students
- Summarize key concepts and required steps for OJT evaluation
- **Ask trainees to complete the attached OJT Course Evaluation (Section 4).**
- Following the completion of OJT evaluation ensure copies are stored in the student's electronic and physical personnel files

## Section 2: OJT Trainee Guide

This *OJT Trainee Guide* provides all the information you need in order to understand the following:

- Prerequisites
- The OJT Instruction and Evaluation Process
- Related Documents (questions and performances are based on these)
- PPE, Equipment, and Training Aids
- Objectives (what you will know or be able to do)
- Safety and Knowledge Questions and Answers (including Safety Basis, TSR, and/or DSA questions, if applicable)
- Task Performance Steps

### Prerequisites

Prior to this training, you must have successfully completed, or be enrolled in, the following training requirements:

- Curriculum 116, *Radiological Control Technician Requirements*

If you have **not** met these prerequisites, notify your supervisor, training coordinator, or training administrator, and complete the prerequisites.

### The OJT Instruction and Evaluation Process

An instructor will provide you with an *OJT Trainee Guide* for each OJT lesson. Before starting your instruction, you must read the remainder of this *OJT Trainee Guide*. Write down any questions that you have and bring them to the OJT training session.

**During the instruction process, the suggestions below will help you succeed in learning the material:**

- Ask your instructor questions in order to understand what you need to learn. When in doubt, ask!
- Ask for coaching and repeated demonstrations at any time during your instruction.
- Bring your *OJT Trainee Guide* to training sessions and refer to performance steps, safety and knowledge questions, and other related information as often as you like.
- Practice all performance activities for as long as you need to, until you feel comfortable doing the tasks.
- Ensure that you know and understand all the safety and knowledge questions in your *OJT Trainee Guide*. You will be asked these questions verbatim during your evaluation.

**During your evaluation, the following rules apply:**

- You may use your reference materials (such as procedures) during the evaluation, but you may **not** use your *OJT Trainee Guide*.
- The evaluator cannot answer any questions or coach you.
- Perform each task in accordance with the appropriate training/reference materials.
- In the event any problems arise beyond your knowledge and skills, step back and allow the evaluator to take control.
- Your performance criteria are as follows:
  - Failing to respond correctly to a safety-related question (including Safety Basis, Technical Safety Requirement [TSR], and/or Documented Safety Analysis [DSA] questions, if applicable) is an automatic failure of this evaluation. Safety questions require 100% accuracy.

- You must successfully respond to all knowledge questions 80% or better.
- Incorrectly **performing** any **critical step** or two (2) non-critical steps constitutes a failure of this evaluation.
- A **critical step** in a performance demonstration is defined as a step that, if incorrectly performed or performed in the wrong order, may cause the following: personnel injury or a safety issue; equipment damage or cause a TSR and/or; significant recovery time.
- The OJT evaluator **must** record any error serious enough to warrant discontinuing the training session or a failure of a task/subtask evaluation.

### Related Documents

RELATED DOCUMENTS
<p>The documents below provide the basis for all knowledge and safety questions, as well as performance of tasks.</p> <ul style="list-style-type: none"><li>• <b>RP-1-DP-56, Eberline Teletectors</b></li><li>• <b>RP-1-DP-27, Operational Checks of Beta/Gamma Survey Instruments</b></li><li>• <b>RP-1-Form-34, Beta/Gamma Survey Instrument Performance Test Log</b></li><li>• <b>RP-PROG-FORM-041, Instrument Check Tag</b></li></ul>

### Objectives

OBJECTIVES
<p>Terminal Objectives:</p> <p>TO1: Given the need to operate an Eberline Teletector, perform all the required checks to place the instrument in service in accordance with RP-1- DP-27, <i>Operational Checks of Beta/Gamma Survey Instruments</i> and RP-1-DP-56, <i>Eberline Teletectors</i></p>
<p>Enabling Objectives:</p> <p>EO1: Recognize limitations associated with Eberline Teletectors</p> <p>EO2: Perform the operational checks for an Eberline Teletector</p> <p>EO3: Establish reference readings for an Eberline Teletector</p> <p>EO4: Initiate an Instrument Check Tag for an Eberline Teletector</p> <p>EO5: State the circumstances in which a routine response check is required for Eberline Teletectors</p> <p>EO6: State the circumstances in which a performance test is required for Eberline Teletectors</p>

*Note: In order to complete this form, the OJT evaluator must initial in the Sat. or Unsat. columns as appropriate.*

### Task Performance Steps

#### P1: Perform Operational (functional), Reference, and Response Checks for the Eberline Teletector.

**EVALUATOR:** Ask the Trainee to *“Perform an initial setup for the Eberline Teletector.”*

Performance Step	Sat.	Unsat.
<b>P1.1: Perform operational checks (functional checks) for the Eberline Teletector. (RP-1-DP-56)</b> Acceptable performance: <ul style="list-style-type: none"> <li>RP-1-DP-56, 3.1, steps: 1-7</li> </ul>		
<b>P1.2: Establish reference readings for the Eberline Teletector. (RP-1-DP-27)</b> Acceptable performance: <ul style="list-style-type: none"> <li>Section 4.2, steps: 1-16 (steps 9,10,12, &amp; 14 not applicable when using Cs-137 source)</li> <li>Properly fills out all applicable blocks on RP-1-Form-34</li> </ul> <b>Safety: Gloves must be worn when handling sources</b>		(S)
<b>P1.3: Establish response check data for the Eberline Teletector. (RP-1-DP-27)</b> Acceptable performance: <ul style="list-style-type: none"> <li>Section 4.3, steps: 1-6</li> <li>Properly fills out all applicable information on RP-PROG-FORM-041</li> </ul> <b>Safety: Gloves must be worn when handling sources</b>		(S)
<b>K1.1: When is a performance check required for the Eberline Teletector? (RP-1-DP-27, section 4.5)</b> Acceptable response: <ul style="list-style-type: none"> <li>After changing batteries, cables, or probes</li> <li>If the instrument fails a response check</li> <li>Any time the proper response of the instrument is in question</li> <li>Before entering high or very high radiation areas</li> </ul>		

Performance Step	Sat.	Unsat.
<b>K1.2: When is a response check required for the Eberline Teletector?</b> (RP-1-DP-27, section 4.4) Acceptable response: <ul style="list-style-type: none"> <li>• Prior to the first use of the day or shift</li> <li>• During intermittent use conditions</li> <li>• Several times a day during continuous use</li> </ul>		
<b>K1.3: How many detectors does the Eberline Teletector contain, and what type are they?"</b> (RP-1- DP-56, section 2) Acceptable response: <ul style="list-style-type: none"> <li>• Two G-M detectors</li> <li>• Gamma radiation</li> </ul>		
<b>K1.4: What are the limitations of the Eberline Teletector?"</b> (RP-1- DP-56, section 2) Acceptable response: <ul style="list-style-type: none"> <li>• G-M detectors, such as those in the Teletector, cannot be used for quantitative gamma radiation measurements unless the energies of the isotopes being measured are known and the instrument has been calibrated for the energy range</li> </ul>		
<b>K1.5: Why must you take care when extending the Eberline Teletector.</b> (RP-1-DP-56, section 2) Acceptable response: <ul style="list-style-type: none"> <li>• To prevent internal damage. Twisting of telescopic probe extension may easily break internal wires</li> </ul>		

When the trainee completes the **instructional** portion of this on-the-job training, both the instructor and the trainee must sign at the same time and date. When the trainee completes all **evaluation**, both the evaluator and the trainee must sign at the same time and date. (If more than one instructor or evaluator is involved, add names and signatures.)

Trainee Name (print):	Z#:
Trainee Post-Instruction Signature:	Date:
Trainee Post-Evaluation Signature:	Date:
Instructor Name (print):	Z#:
Instructor Signature:	Date:
Evaluator Name (print):	Z#:
Evaluator Signature:	Date:

## Section 3: OJT Evaluator Guide

This *OJT Evaluator Guide* provides all the information you need in order to understand the following:

- Instructions to the OJT Evaluator
- Evaluation criteria
- *Unsatisfactory OJT Evaluation with Remediation Steps* form (section 5)

### Instructions to the OJT Evaluator

#### CAUTION

**DO NOT ALLOW TRAINEE TO MAKE AN ERROR THAT WOULD PUT PERSONNEL, EQUIPMENT, THE ENVIRONMENT, OR THE FACILITY IN JEOPARDY AT ANY TIME DURING THIS EVALUATION.**

- ☐ Review evaluation rules with the trainee and ask if there are any questions before beginning the evaluation.
- ☐ During the evaluation, do not allow the worker to ask questions; do not coach the worker in any way. The worker may consult reference materials (**except** the *OJT Trainee Guide*) at any time during the performance evaluation but may not ask you to clarify on any task or item.

#### NOTE

The evaluator may require the trainee to talk through a performance step before performing it. The evaluator must take care not to agree or disagree with the trainee's statements; this would be coaching. However, an exact repeat-back is not coaching.

In cases where evaluation will involve the use of radioactive sources, utilize the following methods in the priority listed below.

1. Use actual sources.
2. Use Teletrix or other instrument simulators.
3. Supply the trainee with simulated source values.

- During the performance evaluation, ask safety and knowledge questions **verbatim**, including Safety Basis, TSR, and DSA questions, if applicable. Evaluate only knowledge and safety questions, as well as performance steps, that are included in the *OJT Trainee Guide*.
- As a trainee responds/performs acceptably to a question or performance task, write your initials in the "Sat." column. When every item is a "Sat.", submit the completed copy to your training coordinator or training administrator.
- If a trainee fails to answer safety/knowledge questions, or performs tasks/subtasks improperly, write your initials in the "Unsat." column. For all failures, you must complete the *Unsatisfactory OJT Evaluation with Remediation Steps* form (section 5) and submit it to the instructor as well as to your training coordinator or training administrator for recordkeeping purposes.

### Evaluation Criteria

Evaluate the trainee using the criteria below.

- If a trainee responds incorrectly to a safety-related question it is an automatic failure of this evaluation. Safety questions require 100% accuracy (including Safety Basis, TSR, and/or DSA questions, if applicable).
- The trainee must successfully respond to all knowledge questions with 80% or better accuracy.
- Incorrectly **performing** one (1) critical step or two (2) non-critical steps constitutes a failure of this evaluation.
- A **critical step** in a performance demonstration is defined as a step that, if incorrectly performed or performed in the wrong order, may cause the following: personnel injury or a safety issue; equipment damage or cause a Technical Safety Requirement/Review (TSR), and/or; significant recovery time.

**After completion of the OJT; The Evaluator shall complete the following for credit and record retention:**

- 1) Make a copy of the original record and retain at the facility. All OJT records will transfer with the RCT.
- 2) Email a scanned copy of the OJT to [RCT-OJT@lanl.gov](mailto:RCT-OJT@lanl.gov)
  - a. [The email must contain a complete copy of Sections 2 and 4 for credit.](#)
  - b. A copy of section 5 must also be included in cases where remediation is required.

Send the ORIGINAL record to the RP-PROG Group Admin office, MS K788.

## Trainee Evaluation of OJT Instruction and Evaluation

Please take the time to complete the following course evaluation after you have completed the OJT performance evaluation. Your feedback is important to assist us with the effectiveness of this course.

OJT #43120	Title: Eberline Teletector
Date:	Instructor:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. This OJT was a good use of my time.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. This OJT will enable me to perform this task safely and correctly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. The learning objectives found in this OJT were appropriate to the task being trained.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. The performance evaluation portion of this OJT was effective at measuring how much I learned during the instructional portion of the OJT.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Rate your level of knowledge:	Low				High
Before the OJT instruction and evaluation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
After the OJT instruction and evaluation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If you marked "Disagree" or "Strongly Disagree" to any of the above, please let us know why (in detail):

What changes would you recommend to make to this OJT course more effective?

## Unsatisfactory OJT Evaluation with Remediation Steps

Task or Question #	Reason for failure	Remediation steps

Course Title: <b>Eberline Teletector</b>	OJT #: <b>43120</b>
Trainee Name (print):	Z #:
Signature:	Date:
Evaluator Name (print):	Z #:
Signature:	Date:

1. **THE TRAINEE MAY NOT PERFORM THE OJT TRAINEE GUIDE TASKS IN HIS/HER JOB UNTIL PASSING THE EVALUATION FOR THOSE TASKS.** The only exception is if he/she is supervised directly by a person qualified for those tasks.
2. The evaluator must provide remediation according to the above "Remediation Steps." When ready, the trainee must be evaluated a second time. This process continues until the trainee passes the evaluation.
3. Submit this form to the appropriate training coordinator or training administrator to file the original in the trainee's training records.



**Organization Name**  
RP-PROG

**OJT Course Title**

RCT: Operation of the RadEye PX with NRD

**Course Number**  
32389

**Revision Number**  
2.0

Developer	Timothy Vance <i>Developer</i>	<small>Digitally signed by TIMOTHY VANCE (Affiliate) Date: 2022.02.23 15:23:15 -07'00'</small> TIMOTHY VANCE (Affiliate) <i>Signature</i>	<i>Date</i>
Subject Matter Review	Matthew Hill <i>Subject Matter Expert</i>	<small>Digitally signed by MATTHEW HILL (Affiliate) Date: 2022.02.24 08:05:33 -07'00'</small> MATTHEW HILL (Affiliate) <i>Signature</i>	<i>Date</i>
Approval	Keith Luna <i>RP Programs Team Leader</i>	<small>Digitally signed by KEITH LUNA (Affiliate) Date: 2022.02.24 08:47:10 -07'00'</small> KEITH LUNA (Affiliate) <i>Signature</i>	<i>Date</i>

**This document does not contain scientific or technical information  
DUSA Designator: RADPRO**

**NOTE**

This document contains instructions for all three OJT training roles: Instructor, Trainee, and Evaluator.

Section 1, ***OJT Instructor Guide***, provides information for developing and teaching OJT.

Section 2, ***OJT Trainee Guide***, contains everything a trainee needs to prepare for training and evaluation.

Section 3, ***OJT Evaluator Guide***, provides rules and guidelines to evaluate a trainee properly.

Section 4, ***Trainee Evaluation of OJT Instruction and Evaluation***.

Section 5, ***Unsatisfactory OJT Evaluation with Remediation Steps***.

**Revision Log**

Rev. No.	Date	Description of Change
0.0	7/15/2016	Initial release
1.0	5/24/2021	Revised to comply with OJT template
2.0	2/8/2022	Revised OJT templates to improve LP information and updated procedural revisions

## Section 1: OJT Instructor Guide

This *OJT Instructor Guide* provides all the information you need in order to understand the following:

- OJT Instructor and Evaluator Qualifications
- OJT Instruction Checklist
- OJT Lesson Plan

### OJT Instructor and Evaluator Qualifications

1. OJT instructors and evaluators must meet the following criteria:
  - Completed TSQP: OJT Instructor/Evaluator training requirements (Curriculum 411: TSQP—OJT Instructor/Evaluator)
2. SMEs cannot develop OJT instructional material unless they meet one of the two requirements below:
  - They have completed the appropriate instructional TSQP development courses (Curriculum: 409—TSQP Training Specialist [nonnuclear facility] or 10484: TSQP—Training Specialist [nuclear facility]) or
  - A qualified training specialist, training manager, or organizational representative reviews and approves the lesson plan.
3. An OJT instructor/evaluator is limited to training/evaluating no more than three trainees at a time. To exceed the limit for the trainee-to-instructor ratio, the responsible line manager, or designee, with advice from the instructor and operations workers, approves an appropriate ratio and documents the ratio in the *OJT Lesson Plan* or in a separate memorandum for special circumstances.

**Note:** *Candidates for certification in nuclear facilities must receive one-on-one OJT instruction with the exception of a student to instructor ratio of up to a 12 to 1 as set forth in RP memorandum RP-18-028.*

## OJT Lesson Plan

The lesson plan itself is divided into three training sections: introduction, body, and conclusion. Ensure that you cover all material in the order indicated, and remember to review and apply the training techniques that you learned during your TSQP instruction. During training, you can say the italicized wording *verbatim* or use similar wording that is more natural to you. In addition, remember to provide information for items that are **[bold and inside brackets]**.

### Introduction

- Brief Building Emergency Plan
- Provide an overview for the OJT instruction and evaluation process – **Prepare** (review of applicable procedures), **Practice** (Instructor guided practice and demonstrations), and **Present** (independent OJT evaluations)
- Ensure students have copies of the following materials:
  - a. RP-SOP-084, NRD Detector with the RadEye PX, rev. 1
  - b. RP-1-DP-28, Operational Checks of Neutron Survey Instruments, rev. 1
  - c. RP-1-FORM-49, Neutron Survey Instrument Performance Test Log, rev. 1
  - d. RP-PROG-FORM-041, Instrument Check Tag, rev. 2

### Body

- **Procedure Review** – RP-SOP-084, RP-1-DP-28, and RP-1-FORM-49. Review with students and ensure the following topics are emphasized:
  - a. Operational Characteristics of the RadEye PX with NRD (RP-SOP-084, p. 1/App. A)
    - Types of radiation detected – Neutron
    - Ranges of detector – 0.01 mrem/hr to 20 rem/hr
    - Detector configuration – 4 atm of He-3 within a 4.5 cc cylindrical detector tube
    - Type of detector – Proportional
    - Alarm Threshold – 1 rem/hr
  - Field Maintenance (RP-SOP-084, section 8.0)
    - Types of batteries in use – two AAA batteries
    - Inform students to ensure instrument is off prior to changing batteries or wires
  - b. Operational Checks of the Radeye PX with NRD ( RP-SOP-084 and RP-1-FORM-49)
    - Explain differences between performance tests and routine response checks
    - Establishing Reference Readings – When is this required?
  - c. Operation of the Radeye PX with NRD (RP-SOP-084, section 4.5, p. 9)
    - If a flashing display is ever observed, retreat immediately to a safer location
      - i. **SAFETY: Radiological Safety**

- **OJT Task Demonstration**

- Demonstrate all required performance steps
- Perform AAA Battery Replacement
- Quiz students on knowledge questions
- Utilize an AmBe Calibrator or simulated sources to perform all measurements for Reference Readings and Response Checks and complete RP-1-FORM-49
  - **SAFETY: Anti-contamination gloves must be worn when handling radioactive sources**

### **Conclusion**

- Review learning objectives with students
- Summarize key concepts and required steps for OJT evaluation
- **Ask trainees to complete the attached *OJT Course Evaluation* (Section 4).**
- Following the completion of OJT evaluation ensure electronic copies are stored in the students personnel file and the physical training record is stored in the RCT training file cabinet.

## Section 2: OJT Trainee Guide

This *OJT Trainee Guide* provides all the information you need in order to understand the following:

- Prerequisites
- The OJT Instruction and Evaluation Process
- Related Documents (questions and performances are based on these)
- PPE, Equipment, and Training Aids
- Objectives (what you will know or be able to do)
- Safety and Knowledge Questions and Answers (including Safety Basis, TSR, and/or DSA questions, if applicable)
- Task Performance Steps

### Prerequisites

Prior to this training, you must have successfully completed, or be enrolled in, the following training requirements:

- Curriculum 116, *Radiological Control Technician Requirements*

If you have **not** met these prerequisites, notify your supervisor, training coordinator, or training administrator, and complete the prerequisites.

### The OJT Instruction and Evaluation Process

An instructor will provide you with an *OJT Trainee Guide* for each OJT lesson. Before starting your instruction, you must read the remainder of this *OJT Trainee Guide*. Write down any questions that you have and bring them to the OJT training session.

During the instruction process, the suggestions below will help you succeed in learning the material:

- Ask your instructor questions in order to understand what you need to learn. When in doubt, ask!
- Ask for coaching and repeated demonstrations at any time during your instruction.
- Bring your *OJT Trainee Guide* to training sessions and refer to performance steps, safety and knowledge questions, and other related information as often as you like.
- Practice all performance activities for as long as you need to, until you feel comfortable doing the tasks.
- Ensure that you know and understand all the safety and knowledge questions in your *OJT Trainee Guide*. You will be asked these questions verbatim during your evaluation.

During your evaluation, the following rules apply:

- You may use your reference materials (such as procedures) during the evaluation, but you may **not** use your *OJT Trainee Guide*.
- The evaluator cannot answer any questions or coach you.
- Perform each task in accordance with the appropriate training/reference materials.
- In the event any problems arise beyond your knowledge and skills, step back and allow the evaluator to take control.
- Your performance criteria are as follows:
  - Failing to respond correctly to a safety-related question (including Safety Basis, Technical Safety Requirement [TSR], and/or Documented Safety Analysis [DSA] questions, if applicable) is an automatic failure of this evaluation. Safety questions require 100% accuracy.

- You must successfully respond to all knowledge questions 80% or better.
- Incorrectly **performing** any **critical step** or two (2) non-critical steps constitutes a failure of this evaluation.
- A **critical step** in a performance demonstration is defined as a step that, if incorrectly performed or performed in the wrong order, may cause the following: personnel injury or a safety issue; equipment damage or cause a TSR and/or; significant recovery time.
- The OJT evaluator **must** record any error serious enough to warrant discontinuing the training session or a failure of a task/subtask evaluation.

### Related Documents

RELATED DOCUMENTS
<p>The documents below provide the basis for all knowledge and safety questions, as well as performance of tasks.</p> <ul style="list-style-type: none"><li>• <b>RP-SOP-084, NRD Detector with the RadEye PX, rev. 1</b></li><li>• <b>RP-1-DP-28, Operational Checks of Neutron Survey Instruments, rev. 1</b></li><li>• <b>RP-1-FORM-49, Neutron Survey Instrument Performance Test Log, rev. 1</b></li><li>• <b>RP-PROG-FORM-041, Instrument Check Tag, rev. 2</b></li></ul>

### Objectives

OBJECTIVES
<p>Terminal Objectives:</p> <p>TO1: Given the need to operate the RadEye PX with NRD, perform operational checks in accordance with RP-1-DP-28, <i>Operational Checks of Neutron Survey Instruments</i></p> <p>TO2: Given the need to survey for neutron radiation, operate the RadEye PX with NRD in accordance with RP-1-SOP-084, <i>NRD Detector with the RadEye PX</i></p>
<p>Enabling Objectives:</p> <p>EO1: Establish reference readings for the RadEye PX with NRD</p> <p>EO2: Perform the operational checks for the RadEye PX with NRD</p> <p>EO3: State the circumstances in which a performance check is required for the RadEye PX with NRD</p> <p>EO4: Navigate menu options for the RadEye PX with NRD</p>

*Note: In order to complete this form, the OJT evaluator must initial in the Sat. or Unsat. columns as appropriate.*

### Task Performance Steps

**P1: Perform Operational (functional), Reference, and Response Checks for the RadEye PX with NRD.**

**EVALUATOR:** Ask the Trainee to “Perform an initial setup for the RadEye PX with NRD.”

Performance Step	Sat.	Unsat.
<b>P1.1: Perform operational checks (functional checks) for the RadEye PX with NRD.</b> (RP-1-DP-28 and RP-SOP-084)  Acceptable performance: <ul style="list-style-type: none"> <li>RP-1-DP-28, 3.1, steps 1-3</li> <li>RP-1-DP-28, 3.4, steps 1-6</li> <li>RP-SOP-084, section 6.0</li> </ul>		
<b>P1.2: Establish reference readings for the RadEye PX with NRD.</b> (RP-1-DP-28)  Acceptable Response: <ul style="list-style-type: none"> <li>Section 3.2, steps 1-15</li> <li>Properly fills out all applicable blocks on RP-1-FORM-49</li> </ul> <b>Safety: Gloves must be worn when handling radioactive sources</b>		(S)
<b>P1.3: Establish response check data for the RadEye PX with NRD.</b> (RP-1-DP-28)  Acceptable Response: <ul style="list-style-type: none"> <li>Section 3.3, steps 1-2</li> <li>Section 3.4, steps 1-6</li> <li>Properly fills out all applicable blocks on RP-PROG-FORM-041</li> </ul> <b>Safety: Gloves must be worn when handling radioactive sources</b>		(S)
<b>K1.1: Demonstrate knowledge of the times a performance test is required for the RadEye PX with NRD.</b> (RP-1-DP-28, section 3.5 and RP-SOP-084, section 6.0)  <i>“When is a performance test required for the RadEye PX with NRD?”</i>  Acceptable Response: <ul style="list-style-type: none"> <li>After changing batteries/ cables</li> <li>At any time when the proper response of the instrument is in question</li> <li>After a failed response check</li> <li>As specified in the facility-specific RMIs</li> <li>Before entering High or Very High Radiation Areas</li> </ul>		

Performance Step	Sat.	Unsat.
<b>K1.2: Demonstrate knowledge of what to do if a flashing display reading is observed.</b> (RP-SOP-084, section 4.5) <i>“What Actions are required if a flashing display is observed on the RadEye PX with NRD?”</i>  Acceptable performance: <ul style="list-style-type: none"> <li>Retreat immediately to a safer location</li> </ul> <b>Safety: Radiological safety</b>		

(S)

When the trainee completes the **instructional** portion of this on-the-job training, both the instructor and the trainee must sign at the same time and date. When the trainee completes all **evaluation**, both the evaluator and the trainee must sign at the same time and date. (If more than one instructor or evaluator is involved, add names and signatures.)

Trainee Name (print):	Z#:
Trainee Post-Instruction Signature:	Date:
Trainee Post-Evaluation Signature:	Date:
Instructor Name (print):	Z#:
Instructor Signature:	Date:
Evaluator Name (print):	Z#:
Evaluator Signature:	Date:

## Section 3: OJT Evaluator Guide

This *OJT Evaluator Guide* provides all the information you need in order to understand the following:

- Instructions to the OJT Evaluator
- Evaluation criteria
- *Unsatisfactory OJT Evaluation with Remediation Steps* form (section 5)

### Instructions to the OJT Evaluator

#### CAUTION

**DO NOT ALLOW TRAINEE TO MAKE AN ERROR THAT WOULD PUT PERSONNEL, EQUIPMENT, THE ENVIRONMENT, OR THE FACILITY IN JEOPARDY AT ANY TIME DURING THIS EVALUATION.**

- ☐ Review evaluation rules with the trainee, and ask if there are any questions before beginning the evaluation.
- ☐ During the evaluation, do not allow the worker to ask questions; do not coach the worker in any way. The worker may consult reference materials (**except** the *OJT Trainee Guide*) at any time during the performance evaluation but may not ask you to clarify on any task or item.

#### NOTE

The evaluator may require the trainee to talk through a performance step before performing it. The evaluator must take care not to agree or disagree with the trainee's statements; this would be coaching. However, an exact repeat-back is not coaching.

In cases where evaluation will involve the use of radioactive sources, utilize the following methods in the priority listed below.

1. Use actual sources.
2. Use Teletrix or other instrument simulators.
3. Supply the trainee with simulated source values.

- During the performance evaluation, ask safety and knowledge questions **verbatim**, including Safety Basis, TSR, and DSA questions, if applicable. Evaluate only knowledge and safety questions, as well as performance steps, that are included in the *OJT Trainee Guide*.
- As a trainee responds/performs acceptably to a question or performance task, write your initials in the "Sat." column. When every item is a "Sat.", submit the completed copy to your training coordinator or training administrator.
- If a trainee fails to answer safety/knowledge questions, or performs tasks/subtasks improperly, write your initials in the "Unsat." column. For all failures, you must complete the *Unsatisfactory OJT Evaluation with Remediation Steps* form (section 5) and submit it to the instructor as well as to your training coordinator or training administrator for recordkeeping purposes.

### Evaluation Criteria

Evaluate the trainee using the criteria below.

- If a trainee responds incorrectly to a safety-related question it is an automatic failure of this evaluation. Safety questions require 100% accuracy (including Safety Basis, TSR, and/or DSA questions, if applicable).
- The trainee must successfully respond to all knowledge questions with 80% or better accuracy.
- Incorrectly **performing** one (1) critical step or two (2) non-critical steps constitutes a failure of this evaluation.
- A **critical step** in a performance demonstration is defined as a step that, if incorrectly performed or performed in the wrong order, may cause the following: personnel injury or a safety issue; equipment damage or cause a Technical Safety Requirement/Review (TSR), and/or; significant recovery time.

**After completion of the OJT; The Evaluator shall complete the following for credit and record retention:**

- 1) Make a copy of the original record and retain at the facility. All OJT records will transfer with the RCT.
- 2) Email a scanned copy of the OJT to [RCT-OJT@lanl.gov](mailto:RCT-OJT@lanl.gov)
  - a. [The email must contain a complete copy of Sections 2 and 4 for credit.](#)
  - b. A copy of section 5 must also be included in cases where remediation is required.

Send the ORIGINAL record to the RP-PROG Group Admin office, MS K788.

## Trainee Evaluation of OJT Instruction and Evaluation

Please take the time to complete the following course evaluation after you have completed the OJT performance evaluation. Your feedback is important to assist us with the effectiveness of this course.

<b>OJT # 32389</b>	<b>Title: Operation of the RadEye PX with NRD</b>
<b>Date:</b>	Instructor:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. This OJT was a good use of my time.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. This OJT will enable me to perform this task safely and correctly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. The learning objectives found in this OJT were appropriate to the task being trained.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. The performance evaluation portion of this OJT was effective at measuring how much I learned during the instructional portion of the OJT.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Rate your level of knowledge:	Low				High
Before the OJT instruction and evaluation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
After the OJT instruction and evaluation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If you marked "Disagree" or "Strongly Disagree" to any of the above, please let us know why (in detail):

What changes would you recommend to make to this OJT course more effective?

## Unsatisfactory OJT Evaluation with Remediation Steps

Task or Question #	Reason for failure	Remediation steps

Course Title: <b>Operation of the RadEye PX with NRD</b>	OJT #: <b>32389</b>
Trainee Name (print):	Z #:
Signature:	Date:
Evaluator Name (print):	Z #:
Signature:	Date:

1. **THE TRAINEE MAY NOT PERFORM THE *OJT TRAINEE GUIDE* TASKS IN HIS/HER JOB UNTIL PASSING THE EVALUATION FOR THOSE TASKS.** The only exception is if he/she is supervised directly by a person qualified for those tasks.
2. The evaluator must provide remediation according to the above "Remediation Steps." When ready, the trainee must be evaluated a second time. This process continues until the trainee passes the evaluation.
3. Submit this form to the appropriate training coordinator or training administrator to file the original in the trainee's training records.



**Organization Name**  
RP-PROG

**OJT Course Title**  
RCT: Canberra Alpha Sentry CAM

**Course Number**  
43121

**Revision Number**

2.0

Developer	Timothy Vance <i>Developer</i>	TIMOTHY VANCE (Affiliate) <small>Digitally signed by TIMOTHY VANCE (Affiliate) Date: 2022.03.17 16:23:51 -06'00'</small>	<i>Signature</i>	<i>Date</i>
Subject Matter Review	Matthew Hill <i>Subject Matter Expert</i>	MATTHEW HILL (Affiliate) <small>Digitally signed by MATTHEW HILL (Affiliate) Date: 2022.04.04 08:14:48 -06'00'</small>	<i>Signature</i>	<i>Date</i>
Approval	Keith Luna <i>RP Programs Team Leader</i>	KEITH LUNA (Affiliate) <small>Digitally signed by KEITH LUNA (Affiliate) Date: 2022.04.06 13:42:48 -06'00'</small>	<i>Signature</i>	<i>Date</i>

**This document does not contain scientific or technical information  
DUSA Designator: RADPRO**

**NOTE**

This document contains instructions for all three OJT training roles: Instructor, Trainee, and Evaluator.

Section 1, ***OJT Instructor Guide***, provides information for developing and teaching OJT.

Section 2, ***OJT Trainee Guide***, contains everything a trainee needs to prepare for training and evaluation.

Section 3, ***OJT Evaluator Guide***, provides rules and guidelines to evaluate a trainee properly.

Section 4, ***Trainee Evaluation of OJT Instruction and Evaluation***.

Section 5, ***Unsatisfactory OJT Evaluation with Remediation Steps***.

## Revision Log

Rev. No.	Date	Description of Change
1.0	10/24/2018	Initial release
2.0	3/14/2022	Revised to incorporate recent procedure changes for RP-PROG-TP-200. Modified Learning Objectives.

## Section 1: OJT Instructor Guide

This *OJT Instructor Guide* provides all the information you need in order to understand the following:

- OJT Instructor and Evaluator Qualifications
- OJT Instruction Checklist
- OJT Lesson Plan

### OJT Instructor and Evaluator Qualifications

1. OJT instructors and evaluators must meet the following criteria:
  - Completed TSQP: OJT Instructor/Evaluator training requirements (Curriculum 411: TSQP—OJT Instructor/Evaluator)
2. SMEs cannot develop OJT instructional material unless they meet one of the two requirements below:
  - They have completed the appropriate instructional TSQP development courses (Curriculum: 409—TSQP Training Specialist [nonnuclear facility] or 10484: TSQP—Training Specialist [nuclear facility]) or
  - A qualified training specialist, training manager, or organizational representative reviews and approves the lesson plan.
3. An OJT instructor/evaluator is limited to training/evaluating no more than three trainees at a time. To exceed the limit for the trainee-to-instructor ratio, the responsible line manager, or designee, with advice from the instructor and operations workers, approves an appropriate ratio and documents the ratio in the *OJT Lesson Plan* or in a separate memorandum for special circumstances.

**Note:** *Candidates for certification in nuclear facilities must receive one-on-one OJT instruction with the exception of a student to instructor ratio of up to a 12 to 1 as set forth in RP memorandum RP-18-028.*

## OJT Lesson Plan

The lesson plan itself is divided into three training sections: introduction, body, and conclusion. Ensure that you cover all material in the order indicated, and remember to review and apply the training techniques that you learned during your TSQP instruction. During training, you can say the italicized wording *verbatim* or use similar wording that is more natural to you. In addition, remember to provide information for items that are **[bold and inside brackets]**.

### Introduction

- Brief Building Emergency Plan
- Provide an overview for the OJT instruction and evaluation process – **Prepare** (review of applicable procedures), **Practice** (Instructor guided practice and demonstrations), and **Present** (independent OJT evaluations)
- Ensure students have copies of the following materials:
  - a. RP-SOP-040, Canberra Alpha Sentry CAM, rev. 1
  - b. RP-1-FORM-55, Canberra Alpha CAM Performance Log, rev. 0

### Body

- **Procedure Review** – RP-SOP-040 and the RP-1-FORM-55. Review with students and ensure the following topics are emphasized:
  - a. Operational Characteristics of Canberra Alpha Sentry CAM (RP-SOP-040, p.20)
    - Types of radiation detected – Alpha
    - Flow Measurement- recommended 2.0 cfm
    - Background Reduction- Patented screen removes >95% of newly formed radon daughter products
    - Type of detector – Passive Implanted Planar Silicon (PIPS)
  - b. Operating the Alpha Sentry CAM Manager (RP-SOP-040, p. 8)
    - Gain access to CAM information using password “1000”
    - Explain the detailed LCD display for an individual CAM- the status of a single CAM head, bar graph indication of flow rate and DAC/DAC-hrs, cpm from previous count cycle, filter change date
    - Observe and explain the alarm indications- (RP-SOP-040, table 3, p. 10)
    - Information and error messages- (RP-SOP-040, p. 18)
  - c. Weekly Maintenance (RP-SOP-040, p. 21)
    - Filter Change- Change filter weekly (RP-SOP-040, p. 13-15), error messages may indicate the need for more frequent filter changes
    - Precautions to be taken when changing filter- Ensure white plastic filter is installed with “X” up, ensure filter is centered, use the white paper, not the blue separator material, and ensure cartridge is correctly seated prior to closing detector door
    - Incorrect filter media or failure to separate the filter from the blue separator material may cause flow to be either too high or too low
    - Radon Rejection Screen- Verify screen is not clogged by dust
  - d. Performance Test for Canberra Alpha Sentry CAM (RP-SOP-040, p.11-13 and RP-1-FORM-55)

- Explain differences between a full performance test and a test of either acute alarm or efficiency
- Recommended periodicity for performance testing- weekly
- e. Special Notes (RP-SOP-040, p. 7)
  - Interferences associated with the performance of the Canberra Alpha Sentry - Radio frequency interference (RFI), light, large AC line voltage spikes, and conductive materials (humidity chemicals, etc.)
  - **Technical Safety Requirement-** Some CAM heads and ASM1000s may need to be in service to satisfy TSRs- this may also apply to CAM remote alarm status indicators.
- **OJT Task Demonstration**
  - Demonstrate all required performance steps
  - Quiz students on knowledge questions
  - Utilize a model AS080 Am-241 source or simulated source to perform all measurements for performance test and Complete RP-1-FORM-55
  - **SAFETY: Anti-contamination gloves must be worn when handling radioactive sources**

### **Conclusion**

- Review learning objectives with students
- Summarize key concepts and required steps for OJT evaluation
- **Ask trainees to complete the attached OJT Course Evaluation (Section 4).**
- Following the completion of OJT evaluation ensure copies are stored in the student's electronic and physical personnel files

## Section 2: OJT Trainee Guide

This *OJT Trainee Guide* provides all the information you need in order to understand the following:

- Prerequisites
- The OJT Instruction and Evaluation Process
- Related Documents (questions and performances are based on these)
- PPE, Equipment, and Training Aids
- Objectives (what you will know or be able to do)
- Safety and Knowledge Questions and Answers (including Safety Basis, TSR, and/or DSA questions, if applicable)
- Task Performance Steps

### Prerequisites

Prior to this training, you must have successfully completed, or be enrolled in, the following training requirements:

- Curriculum 116, *Radiological Control Technician Requirements*

If you have **not** met these prerequisites, notify your supervisor, training coordinator, or training administrator, and complete the prerequisites.

### The OJT Instruction and Evaluation Process

An instructor will provide you with an *OJT Trainee Guide* for each OJT lesson. Before starting your instruction, you must read the remainder of this *OJT Trainee Guide*. Write down any questions that you have and bring them to the OJT training session.

During the instruction process, the suggestions below will help you succeed in learning the material:

- Ask your instructor questions in order to understand what you need to learn. When in doubt, ask!
- Ask for coaching and repeated demonstrations at any time during your instruction.
- Bring your *OJT Trainee Guide* to training sessions and refer to performance steps, safety and knowledge questions, and other related information as often as you like.
- Practice all performance activities for as long as you need to, until you feel comfortable doing the tasks.
- Ensure that you know and understand all the safety and knowledge questions in your *OJT Trainee Guide*. You will be asked these questions verbatim during your evaluation.

During your evaluation, the following rules apply:

- You may use your reference materials (such as procedures) during the evaluation, but you may **not** use your *OJT Trainee Guide*.
- The evaluator cannot answer any questions or coach you.
- Perform each task in accordance with the appropriate training/reference materials.
- In the event any problems arise beyond your knowledge and skills, step back and allow the evaluator to take control.
- Your performance criteria are as follows:
  - Failing to respond correctly to a safety-related question (including Safety Basis, Technical Safety Requirement [TSR], and/or Documented Safety Analysis [DSA] questions, if applicable) is an automatic failure of this evaluation. Safety questions require 100% accuracy.

- You must successfully respond to all knowledge questions 80% or better.
- Incorrectly **performing** any **critical step** or two (2) non-critical steps constitutes a failure of this evaluation.
- A **critical step** in a performance demonstration is defined as a step that, if incorrectly performed or performed in the wrong order, may cause the following: personnel injury or a safety issue; equipment damage or cause a TSR and/or; significant recovery time.
- The OJT evaluator **must** record any error serious enough to warrant discontinuing the training session or a failure of a task/subtask evaluation.

### Related Documents

RELATED DOCUMENTS
The documents below provide the basis for all knowledge and safety questions, as well as performance of tasks.
<ul style="list-style-type: none"><li>• <b>RP-SOP-040, Canberra Alpha Sentry CAM, rev. 1</b></li><li>• <b>RP-1-FORM-55, Canberra Alpha CAM Performance Log, rev. 0</b></li></ul>

### Objectives

OBJECTIVES
Terminal Objectives:  TO1: Given the need to monitor for airborne radioactivity with a new CAM head that has not been placed into service, perform an initial setup of the Canberra Alpha Sentry CAM in accordance with RP-SOP-040, <i>Canberra Alpha Sentry CAM</i> .  TO2: Given the need to monitor for airborne radioactivity, operate the Canberra Alpha CAM in accordance with RP-SOP-040, <i>Canberra Alpha Sentry CAM</i> .
Enabling Objectives:  EO1: Recognize limitations and interferences associated with the Canberra Alpha Sentry CAM EO2: Perform a performance test for the Canberra Alpha Sentry CAM EO3: Initiate proper paperwork for the Canberra Alpha Sentry CAM EO4: State the differences in major alarm types for the Canberra Alpha Sentry CAM EO5: State the recommended flow setting of the Canberra Alpha Sentry CAM EO6: Perform the initial setup for the Canberra Alpha Sentry CAM EO7: Perform a filter change for the Canberra Alpha Sentry CAM

*Note: In order to complete this form, the OJT evaluator must initial in the Sat. or Unsat. columns as appropriate.*

### **Task Performance Steps**

**P1: Initialize a new CAM Head for the Canberra Alpha Sentry CAM.**

**EVALUATOR:** Ask the Trainee to “Initialize the newly received CAM head for the Canberra Alpha Sentry CAM.”

Performance Step	Sat.	Unsat.
<b>K1.1: What checks must be performed prior to using a CAM? (RP-SOP-040, section 3.1 and 4.0)</b> Acceptable Response: <ul style="list-style-type: none"> <li>Calibration and signs of visible damage, especially the radon rejection screen</li> </ul>		
<b>K1.2: What precaution must an RCT be aware of when placing a filter cartridge into the CAM head of the Canberra Alpha sentry CAM? (RP-SOP-040, section 3.5.3, step 3)</b> Acceptable Response: <ul style="list-style-type: none"> <li>Ensure the notch on the underside of the cartridge is meshed with the orientation dimple in the filter holder</li> </ul>		
<b>P1.1: Perform initialization of CAM Head with CAM Manager for the Canberra Alpha Sentry CAM. (RP-SOP-040)</b> Acceptable performance: <ul style="list-style-type: none"> <li>Section 3.2.4 Steps: 1-8.</li> </ul>		
<b>P1.2: Conduct a performance test of the newly installed CAM head for the Canberra Alpha Sentry CAM. (RP-SOP-040 Sections 3.4.1,2,3)</b> Acceptable Response: (perform applicable steps) <ul style="list-style-type: none"> <li>Log in to system using password “1000”</li> <li>3.4.1 <i>Conducting a Performance Test</i>, steps: 1-2</li> <li>3.4.2 <i>Preparing CAM Network for the Test</i>, steps: 1-4</li> <li>3.4.3 <i>The Performance Test</i>, steps: 1-7</li> <li>3.4.5 <i>Returning the System to Service</i>: press “NETWORK DISPLAY”</li> <li>Fill in the applicable blocks of RP-1-FORM-55</li> </ul> <b>Safety: Gloves must be worn when handling sources</b>		

(S)

**P2: Perform a Filter Change on a Canberra Alpha Sentry CAM.**

**EVALUATOR:** Ask the Trainee to “Perform a filter change for the Canberra Alpha Sentry CAM.”

Performance Step	Sat.	Unsat.
<p><b>P2.1: Perform a filter change on the recently installed CAM head for the Canberra alpha sentry CAM.</b> (RP-SOP-040, sections 3.5.1,2,3, and 4)</p> <p>Acceptable performance: (perform applicable steps)</p> <ul style="list-style-type: none"> <li>3.5.1, <i>Preparing the New Filter Cartridges</i>, steps: 1-4</li> <li>3.5.2, <i>Preparing the Network for the Filter Change</i>, steps: 1-4 and 1-2</li> <li>3.5.3, <i>Changing the Filter Cartridges</i>, steps: 1-4</li> <li>3.5.4, <i>Returning the System to Service</i>, press “Network Display” to end the filter change process</li> </ul> <p><b>Safety: Gloves must be worn when handling air sampler media</b></p>		
<p><b>K2.1: State the recommended flow rate for the Canberra Alpha Sentry CAM</b> (RP-SOP-040 p. 20)</p> <p>Acceptable performance:</p> <ul style="list-style-type: none"> <li>2.0 cfm</li> </ul>		
<p><b>K2.2: What interferences could prevent normal operation of the Canberra Alpha Sentry CAM?</b> (RP-SOP-040, Section 2.0)</p> <p>Acceptable Response:</p> <ul style="list-style-type: none"> <li>Sensitive to radiofrequency interference, Light, AC line voltage spikes</li> <li>Conductive materials on the detector face</li> </ul>		
<p><b>K2.3: What are the “Acute” and “Chronic” alarms?</b> (RP-SOP-040 section 3.6)</p> <p>Acceptable Response:</p> <ul style="list-style-type: none"> <li>Acute- Triggered when the CAM head senses a rapid increase in net count rate (counts above background) in the spectrum that is being collected.</li> <li>Chronic- The ASM1000 has determined that the cumulative dose measured by a given CAM head has exceeded the DAC-hr alarm set point.</li> </ul>		

(S)

**When the trainee completes the *instructional* portion of this on-the-job training, both the instructor and the trainee must sign at the same time and date. When the trainee completes all evaluation, both the evaluator and the trainee must sign at the same time and date. (If more than one instructor or evaluator is involved, add names and signatures.)**

Trainee Name (print):	Z#:
Trainee Post-Instruction Signature:	Date:
Trainee Post-Evaluation Signature:	Date:
Instructor Name (print):	Z#:
Instructor Signature:	Date:
Evaluator Name (print):	Z#:
Evaluator Signature:	Date:

## Section 3: OJT Evaluator Guide

This *OJT Evaluator Guide* provides all the information you need in order to understand the following:

- Instructions to the OJT Evaluator
- Evaluation criteria
- *Unsatisfactory OJT Evaluation with Remediation Steps* form (section 5)

### Instructions to the OJT Evaluator

#### CAUTION

**DO NOT ALLOW TRAINEE TO MAKE AN ERROR THAT WOULD PUT PERSONNEL, EQUIPMENT, THE ENVIRONMENT, OR THE FACILITY IN JEOPARDY AT ANY TIME DURING THIS EVALUATION.**

- ☐ Review evaluation rules with the trainee, and ask if there are any questions before beginning the evaluation.
- ☐ During the evaluation, do not allow the worker to ask questions; do not coach the worker in any way. The worker may consult reference materials (**except** the *OJT Trainee Guide*) at any time during the performance evaluation but may not ask you to clarify on any task or item.

#### NOTE

The evaluator may require the trainee to talk through a performance step before performing it. The evaluator must take care not to agree or disagree with the trainee's statements; this would be coaching. However, an exact repeat-back is not coaching.

In cases where evaluation will involve the use of radioactive sources, utilize the following methods in the priority listed below.

1. Use actual sources.
2. Use Teletrix or other instrument simulators.
3. Supply the trainee with simulated source values.

- During the performance evaluation, ask safety and knowledge questions **verbatim**, including Safety Basis, TSR, and DSA questions, if applicable. Evaluate only knowledge and safety questions, as well as performance steps, that are included in the *OJT Trainee Guide*.
- As a trainee responds/performs acceptably to a question or performance task, write your initials in the "Sat." column. When every item is a "Sat.", submit the completed copy to your training coordinator or training administrator.
- If a trainee fails to answer safety/knowledge questions, or performs tasks/subtasks improperly, write your initials in the "Unsat." column. For all failures, you must complete the *Unsatisfactory OJT Evaluation with Remediation Steps* form (section 5) and submit it to the instructor as well as to your training coordinator or training administrator for recordkeeping purposes.

### Evaluation Criteria

Evaluate the trainee using the criteria below.

- If a trainee responds incorrectly to a safety-related question it is an automatic failure of this evaluation. Safety questions require 100% accuracy (including Safety Basis, TSR, and/or DSA questions, if applicable).
- The trainee must successfully respond to all knowledge questions with 80% or better accuracy.
- Incorrectly **performing** one (1) critical step or two (2) non-critical steps constitutes a failure of this evaluation.
- A **critical step** in a performance demonstration is defined as a step that, if incorrectly performed or performed in the wrong order, may cause the following: personnel injury or a safety issue; equipment damage or cause a Technical Safety Requirement/Review (TSR), and/or; significant recovery time.

**After completion of the OJT; The Evaluator shall complete the following for credit and record retention:**

- 1) Make a copy of the original record and retain at the facility. All OJT records will transfer with the RCT.
- 2) Email a scanned copy of the OJT to [RCT-OJT@lanl.gov](mailto:RCT-OJT@lanl.gov)
  - a. [The email must contain a complete copy of Sections 2 and 4 for credit.](#)
  - b. A copy of section 5 must also be included in cases where remediation is required.

Send the ORIGINAL record to the RP-PROG Group Admin office, MS K788.

## Trainee Evaluation of OJT Instruction and Evaluation

Please take the time to complete the following course evaluation after you have completed the OJT performance evaluation. Your feedback is important to assist us with the effectiveness of this course.

<b>OJT #43121</b>	<b>Title: Canberra Alpha Sentry CAM</b>
<b>Date:</b>	Instructor:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. This OJT was a good use of my time.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. This OJT will enable me to perform this task safely and correctly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. The learning objectives found in this OJT were appropriate to the task being trained.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. The performance evaluation portion of this OJT was effective at measuring how much I learned during the instructional portion of the OJT.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Rate your level of knowledge:	Low				High
Before the OJT instruction and evaluation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
After the OJT instruction and evaluation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If you marked "Disagree" or "Strongly Disagree" to any of the above, please let us know why (in detail):

What changes would you recommend to make to this OJT course more effective?

## Unsatisfactory OJT Evaluation with Remediation Steps

Task or Question #	Reason for failure	Remediation steps

Course Title: <b>Canberra Alpha Sentry CAM</b>	OJT #: <b>43121</b>
Trainee Name (print):	Z #:
Signature:	Date:
Evaluator Name (print):	Z #:
Signature:	Date:

1. **THE TRAINEE MAY NOT PERFORM THE *OJT TRAINEE GUIDE* TASKS IN HIS/HER JOB UNTIL PASSING THE EVALUATION FOR THOSE TASKS.** The only exception is if he/she is supervised directly by a person qualified for those tasks.
2. The evaluator must provide remediation according to the above "Remediation Steps." When ready, the trainee must be evaluated a second time. This process continues until the trainee passes the evaluation.
3. Submit this form to the appropriate training coordinator or training administrator to file the original in the trainee's training records.



**Organization Name**  
RP-PROG

**OJT Course Title**

RCT: Operation of the Eberline RO-20 Ion Chamber

**Course Number**  
43122

**Revision Number**  
3.0

Developer	Timothy Vance <i>Developer</i>	<div>Digitally signed by TIMOTHY VANCE (Affiliate) Date: 2022.03.17 16:21:22 -06'00'</div> <div>TIMOTHY VANCE (Affiliate)</div> <div><i>Signature</i></div>	<div><i>Date</i></div>
Subject Matter Review	Matthew Hill <i>Subject Matter Expert</i>	<div>Digitally signed by MATTHEW HILL (Affiliate) Date: 2022.04.04 08:17:30 -06'00'</div> <div>MATTHEW HILL (Affiliate)</div> <div><i>Signature</i></div>	<div><i>Date</i></div>
Approval	Keith Luna <i>RP Programs Team Leader</i>	<div>Digitally signed by KEITH LUNA (Affiliate) Date: 2022.04.06 13:46:08 -06'00'</div> <div>KEITH LUNA (Affiliate)</div> <div><i>Signature</i></div>	<div><i>Date</i></div>

**This document does not contain scientific or technical information  
DUSA Designator: RADPRO**

**NOTE**

This document contains instructions for all three OJT training roles: Instructor, Trainee, and Evaluator.

Section 1, ***OJT Instructor Guide***, provides information for developing and teaching OJT.

Section 2, ***OJT Trainee Guide***, contains everything a trainee needs to prepare for training and evaluation.

Section 3, ***OJT Evaluator Guide***, provides rules and guidelines to evaluate a trainee properly.

Section 4, ***Trainee Evaluation of OJT Instruction and Evaluation***.

Section 5, ***Unsatisfactory OJT Evaluation with Remediation Steps***.

## Revision Log

Rev. No.	Date	Description of Change
0.0	10/30/2018	Initial release
1.0	2/20/2020	Removed survey requirement
2.0	11/29/2021	Revised to incorporate recent procedure changes for RP-PROG-TP-200. Modified learning objectives.
3.0	3/8/2022	Revised OJT templates to improve LP information and updated procedural revisions

## Section 1: OJT Instructor Guide

This *OJT Instructor Guide* provides all the information you need in order to understand the following:

- OJT Instructor and Evaluator Qualifications
- OJT Instruction Checklist
- OJT Lesson Plan

### OJT Instructor and Evaluator Qualifications

1. OJT instructors and evaluators must meet the following criteria:
  - Completed TSQP: OJT Instructor/Evaluator training requirements (Curriculum 411: TSQP—OJT Instructor/Evaluator)
2. SMEs cannot develop OJT instructional material unless they meet one of the two requirements below:
  - They have completed the appropriate instructional TSQP development courses (Curriculum: 409—TSQP Training Specialist [nonnuclear facility] or 10484: TSQP—Training Specialist [nuclear facility]) or
  - A qualified training specialist, training manager, or organizational representative reviews and approves the lesson plan.
3. An OJT instructor/evaluator is limited to training/evaluating no more than three trainees at a time. To exceed the limit for the trainee-to-instructor ratio, the responsible line manager, or designee, with advice from the instructor and operations workers, approves an appropriate ratio and documents the ratio in the *OJT Lesson Plan* or in a separate memorandum for special circumstances.

**Note:** *Candidates for certification in nuclear facilities must receive one-on-one OJT instruction with the exception of a student to instructor ratio of up to a 12 to 1 as set forth in RP memorandum RP-18-028.*

## OJT Lesson Plan

The lesson plan itself is divided into three training sections: introduction, body, and conclusion. Ensure that you cover all material in the order indicated, and remember to review and apply the training techniques that you learned during your TSQP instruction. During training, you can say the italicized wording *verbatim* or use similar wording that is more natural to you. In addition, remember to provide information for items that are **[bold and inside brackets]**.

### Introduction

- Brief Building Emergency Plan
- Provide an overview for the OJT instruction and evaluation process – **Prepare** (review of applicable procedures), **Practice** (Instructor guided practice and demonstrations), and **Present** (independent OJT evaluations)
- Ensure students have copies of the following materials:
  - a. RP-PROG-TP-300, Thermo/Eberline RO-20, rev. 0

**Or**

  - b. RP-1-DP-27, Operational Checks of Beta/Gamma Survey Instruments, rev. 1
  - c. RP-SOP-046, Eberline RO-20 Ion Chamber, rev. 5

**And**

  - d. RP-PROG-FORM-110, Exposure Rate Instrument Performance Test Log, rev. 0
  - e. RP-PROG-FORM-041, Instrument Check Tag, rev. 2

### Body

- **Procedure Review** – RP-PROG-TP-300 and the RP-PROG-FORM-110. Review with students and ensure the following topics are emphasized:
  - a. Operational Characteristics of RO-20 (RP-PROG-TP-300, p. 5, 21-22)
    - Types of radiation detected – Beta, Gamma, and X-ray
    - Range of detector – 0-50 R/hr with 5 linear scales: 0-5mR/hr, 0-50mR/hr, 0-500mR/hr, 0-5R/hr, and 0-50R/hr
    - Type of detector – Vented ion chamber
    - Altitude dependence (attachment A)
    - Response to various energies (Appendix 1)
  - b. Field Maintenance (RP-PROG-TP-300, p. 8-9)
    - Types of batteries in use – 12V and AA
    - 12V batteries can only be changed by RIC personnel
  - c. Operational Checks of RO-20 (RP-PROG-TP-300, p. 14/16-17 and RP-PROG-FORM-110)
    - Explain differences between performance tests and routine response checks
    - Establishing reference readings – When is this required?
    - Field Operational Checks – when is this required?

- **OJT Task Demonstration**

- Demonstrate all required performance steps
- Perform AAA Battery Replacement
- Quiz students on knowledge questions
- Utilize a LANL Sr-90 gold source box, DU slugs or simulated sources to perform all measurements for Reference Readings and Response Checks and complete RP-PROG-FORM-110
- **SAFETY: Anti-contamination gloves must be worn when handling radioactive sources**

### ***Conclusion***

- Review learning objectives with students
- Summarize key concepts and required steps for OJT evaluation
- **Ask trainees to complete the attached *OJT Course Evaluation* (Section 4).**
- Following the completion of OJT evaluation ensure copies are stored in the student's electronic and physical personnel files.

## Section 2: OJT Trainee Guide

This *OJT Trainee Guide* provides all the information you need in order to understand the following:

- Prerequisites
- The OJT Instruction and Evaluation Process
- Related Documents (questions and performances are based on these)
- PPE, Equipment, and Training Aids
- Objectives (what you will know or be able to do)
- Safety and Knowledge Questions and Answers (including Safety Basis, TSR, and/or DSA questions, if applicable)
- Task Performance Steps

### Prerequisites

Prior to this training, you must have successfully completed, or be enrolled in, the following training requirements:

- Curriculum 116, *Radiological Control Technician Requirements*

If you have **not** met these prerequisites, notify your supervisor, training coordinator, or training administrator, and complete the prerequisites.

### The OJT Instruction and Evaluation Process

An instructor will provide you with an *OJT Trainee Guide* for each OJT lesson. Before starting your instruction, you must read the remainder of this *OJT Trainee Guide*. Write down any questions that you have and bring them to the OJT training session.

During the instruction process, the suggestions below will help you succeed in learning the material:

- Ask your instructor questions in order to understand what you need to learn. When in doubt, ask!
- Ask for coaching and repeated demonstrations at any time during your instruction.
- Bring your *OJT Trainee Guide* to training sessions and refer to performance steps, safety and knowledge questions, and other related information as often as you like.
- Practice all performance activities for as long as you need to, until you feel comfortable doing the tasks.
- Ensure that you know and understand all the safety and knowledge questions in your *OJT Trainee Guide*. You will be asked these questions verbatim during your evaluation.

During your evaluation, the following rules apply:

- You may use your reference materials (such as procedures) during the evaluation, but you may **not** use your *OJT Trainee Guide*.
- The evaluator cannot answer any questions or coach you.
- Perform each task in accordance with the appropriate training/reference materials.
- In the event any problems arise beyond your knowledge and skills, step back and allow the evaluator to take control.
- Your performance criteria are as follows:
  - Failing to respond correctly to a safety-related question (including Safety Basis, Technical Safety Requirement [TSR], and/or Documented Safety Analysis [DSA] questions, if applicable) is an automatic failure of this evaluation. Safety questions require 100% accuracy.

- You must successfully respond to all knowledge questions 80% or better.
- Incorrectly **performing** any **critical step** or two (2) non-critical steps constitutes a failure of this evaluation.
- A **critical step** in a performance demonstration is defined as a step that, if incorrectly performed or performed in the wrong order, may cause the following: personnel injury or a safety issue; equipment damage or cause a TSR and/or; significant recovery time.
- The OJT evaluator **must** record any error serious enough to warrant discontinuing the training session or a failure of a task/subtask evaluation.

### Related Documents

RELATED DOCUMENTS
<p>The documents below provide the basis for all knowledge and safety questions, as well as performance of tasks.</p> <ul style="list-style-type: none"><li>• <b>RP-PROG-TP-300, Thermo/Eberline RO-20, rev. 0</b> <i>Or</i></li><li>• <b>RP-1-DP-27, Operational Checks of Beta/Gamma Survey Instruments, rev. 1</b></li><li>• <b>RP-SOP-046, Eberline RO-20 Ion Chamber, rev. 5</b> <i>And</i></li><li>• <b>RP-PROG-FORM-110, Exposure Rate Instrument Performance Test Log, rev. 0</b></li><li>• <b>RP-PROG-FORM-041, Instrument Check Tag, rev. 2</b></li></ul>

### Objectives

OBJECTIVES
<p>Terminal Objectives:</p> <p>TO1: Given the need to operate the Eberline RO-20, perform operational checks in accordance with RP-PROG-TP-300, <i>Thermo/Eberline RO-20</i></p> <p>TO2: Given the need to survey for beta/gamma radiation, operate the Eberline RO-20 in accordance with RP-PROG-TP-300, <i>Thermo/Eberline RO-20</i></p>
<p>Enabling Objectives:</p> <p>EO1: Perform the operational checks for the Eberline RO-20</p> <p>EO2: Establish reference readings for the Eberline RO-20</p> <p>EO3: Initiate the instrument check tag for the Eberline RO-20</p> <p>EO4: State the circumstances in which a routine response check is required for the RO-20</p> <p>EO5: State the circumstances in which a performance test is required for the RO-20</p>

*Note: In order to complete this form, the OJT evaluator must initial in the Sat. or Unsat. columns as appropriate.*

### Task Performance Steps

#### P1: Perform Operational (functional), Reference, and Response Checks for the Eberline RO-20.

**EVALUATOR:** Ask the Trainee to “Perform an initial setup for the Eberline RO-20.”

Performance Step	Sat.	Unsat.
<b>P1.1: Perform operational checks (functional checks) for the Eberline RO-20.</b> (RP-PROG-TP-300, sections 4.4.2 and 4.7 <b>OR</b> RP-1-DP-27, section 4.1) Acceptable performance: <ul style="list-style-type: none"> <li>• Verify the RO-20 is in calibration</li> <li>• Check for physical damage or mechanical/ electrical defects</li> <li>• Verify battery levels are acceptable</li> <li>• Verify the meter is zeroed</li> </ul>		
<b>P1.2: Establish reference readings for the Eberline RO-20.</b> (RP-PROG-TP-300 <b>OR</b> RP-1-DP-27, section 4.2) Acceptable Response: <ul style="list-style-type: none"> <li>• Section 4.4.2, steps 1-14</li> <li>• Properly fills out all applicable blocks on RP-PROG-FORM-110</li> </ul> <b>Safety: Gloves must be worn when handling radioactive sources</b>		(S)
<b>P1.3: Establish response check data for the Eberline RO-20.</b> (RP-PROG-TP-300 <b>OR</b> RP-1-DP-27, sections 4.3 and 4.4) Acceptable Response: <ul style="list-style-type: none"> <li>• Section 4.4.3, steps 1-11</li> <li>• Properly fills out all applicable blocks on RP-PROG-FORM-110</li> <li>• Properly fills out all applicable blocks on RP-PROG-FORM-041</li> </ul> <b>Safety: Gloves must be worn when handling radioactive sources</b>		(S)
<b>K1.1: Demonstrate knowledge of the times a performance test is required for the Eberline RO-20.</b> (RP-PROG-TP-300, section 4.5.2 <b>OR</b> RP-SOP-046, section 3.1) <i>“When is a performance test required for the Eberline RO-20?”</i> Acceptable Response: <ul style="list-style-type: none"> <li>• At any time when the proper response of the instrument is in question</li> <li>• After a failed response check</li> <li>• After a severe physical shock to the instrument</li> <li>• Before entering High or Very High Radiation Areas</li> </ul>		

Performance Step	Sat.	Unsat.
<b>K1.2: Demonstrate knowledge of the minimum detectable dose rate using the Eberline RO-20.</b> (RP-PROG-TP-300, section 4.5 <b>OR</b> RP-SOP-046, section 1.2)  <i>"What is the MDDR for the Eberline RO-20?"</i>  Acceptable performance: <ul style="list-style-type: none"> <li>The MDDR for the Eberline RO-20 is 0.1 mR/h</li> </ul>		

When the trainee completes the **instructional** portion of this on-the-job training, both the instructor and the trainee must sign at the same time and date. When the trainee completes all **evaluation**, both the evaluator and the trainee must sign at the same time and date. (If more than one instructor or evaluator is involved, add names and signatures.)

Trainee Name (print):	Z#:
Trainee Post-Instruction Signature:	Date:
Trainee Post-Evaluation Signature:	Date:
Instructor Name (print):	Z#:
Instructor Signature:	Date:
Evaluator Name (print):	Z#:
Evaluator Signature:	Date:

## Section 3: OJT Evaluator Guide

This *OJT Evaluator Guide* provides all the information you need in order to understand the following:

- Instructions to the OJT Evaluator
- Evaluation criteria
- *Unsatisfactory OJT Evaluation with Remediation Steps* form (section 5)

### Instructions to the OJT Evaluator

#### CAUTION

**DO NOT ALLOW TRAINEE TO MAKE AN ERROR THAT WOULD PUT PERSONNEL, EQUIPMENT, THE ENVIRONMENT, OR THE FACILITY IN JEOPARDY AT ANY TIME DURING THIS EVALUATION.**

- ☐ Review evaluation rules with the trainee, and ask if there are any questions before beginning the evaluation.
- ☐ During the evaluation, do not allow the worker to ask questions; do not coach the worker in any way. The worker may consult reference materials (**except** the *OJT Trainee Guide*) at any time during the performance evaluation but may not ask you to clarify on any task or item.

#### NOTE

The evaluator may require the trainee to talk through a performance step before performing it. The evaluator must take care not to agree or disagree with the trainee's statements; this would be coaching. However, an exact repeat-back is not coaching.

In cases where evaluation will involve the use of radioactive sources, utilize the following methods in the priority listed below.

1. Use actual sources.
2. Use Teletrix or other instrument simulators.
3. Supply the trainee with simulated source values.

- During the performance evaluation, ask safety and knowledge questions **verbatim**, including Safety Basis, TSR, and DSA questions, if applicable. Evaluate only knowledge and safety questions, as well as performance steps, that are included in the *OJT Trainee Guide*.
- As a trainee responds/performs acceptably to a question or performance task, write your initials in the "Sat." column. When every item is a "Sat.", submit the completed copy to your training coordinator or training administrator.
- If a trainee fails to answer safety/knowledge questions, or performs tasks/subtasks improperly, write your initials in the "Unsat." column. For all failures, you must complete the *Unsatisfactory OJT Evaluation with Remediation Steps* form (section 5) and submit it to the instructor as well as to your training coordinator or training administrator for recordkeeping purposes.

### Evaluation Criteria

Evaluate the trainee using the criteria below.

- If a trainee responds incorrectly to a safety-related question it is an automatic failure of this evaluation. Safety questions require 100% accuracy (including Safety Basis, TSR, and/or DSA questions, if applicable).
- The trainee must successfully respond to all knowledge questions with 80% or better accuracy.
- Incorrectly **performing** one (1) critical step or two (2) non-critical steps constitutes a failure of this evaluation.
- A **critical step** in a performance demonstration is defined as a step that, if incorrectly performed or performed in the wrong order, may cause the following: personnel injury or a safety issue; equipment damage or cause a Technical Safety Requirement/Review (TSR), and/or; significant recovery time.

**After completion of the OJT; The Evaluator shall complete the following for credit and record retention:**

- 1) Make a copy of the original record and retain at the facility. All OJT records will transfer with the RCT.
- 2) Email a scanned copy of the OJT to [RCT-OJT@lanl.gov](mailto:RCT-OJT@lanl.gov)
  - a. [The email must contain a complete copy of Sections 2 and 4 for credit.](#)
  - b. A copy of section 5 must also be included in cases where remediation is required.

Send the ORIGINAL record to the RP-PROG Group Admin office, MS K788.

## Trainee Evaluation of OJT Instruction and Evaluation

Please take the time to complete the following course evaluation after you have completed the OJT performance evaluation. Your feedback is important to assist us with the effectiveness of this course.

<b>OJT # 43122</b>	<b>Title: RCT: Operation of the Eberline RO-20 Ion Chamber</b>
<b>Date:</b>	Instructor:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. This OJT was a good use of my time.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. This OJT will enable me to perform this task safely and correctly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. The learning objectives found in this OJT were appropriate to the task being trained.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. The performance evaluation portion of this OJT was effective at measuring how much I learned during the instructional portion of the OJT.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Rate your level of knowledge:	Low				High
Before the OJT instruction and evaluation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
After the OJT instruction and evaluation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If you marked "Disagree" or "Strongly Disagree" to any of the above, please let us know why (in detail):

What changes would you recommend to make to this OJT course more effective?

## Unsatisfactory OJT Evaluation with Remediation Steps

Task or Question #	Reason for failure	Remediation steps

Course Title: <b>RCT: Operation of the Eberline RO-20 Ion Chamber</b>	OJT #: <b>43122</b>
Trainee Name (print):	Z #:
Signature:	Date:
Evaluator Name (print):	Z #:
Signature:	Date:

1. **THE TRAINEE MAY NOT PERFORM THE OJT TRAINEE GUIDE TASKS IN HIS/HER JOB UNTIL PASSING THE EVALUATION FOR THOSE TASKS.** The only exception is if he/she is supervised directly by a person qualified for those tasks.
2. The evaluator must provide remediation according to the above "Remediation Steps." When ready, the trainee must be evaluated a second time. This process continues until the trainee passes the evaluation.
3. Submit this form to the appropriate training coordinator or training administrator to file the original in the trainee's training records.



**Organization Name**  
RP-PROG

**OJT Course Title**  
RCT: Operation of the Ludlum 139 with Air Proportional Detector

**Course Number**  
43125

**Revision Number**  
2.0

Developer	Timothy Vance <i>Developer</i>	TIMOTHY VANCE (Affiliate) <small>Digitally signed by TIMOTHY VANCE (Affiliate) Date: 2022.03.17 06:18:54 -06'00'</small>	<i>Signature</i>	<i>Date</i>
Subject Matter Review	Matthew Hill <i>Subject Matter Expert</i>	MATTHEW HILL (Affiliate) <small>Digitally signed by MATTHEW HILL (Affiliate) Date: 2022.03.17 14:20:59 -06'00'</small>	<i>Signature</i>	<i>Date</i>
Approval	Keith Luna <i>RP Programs Team Leader</i>	KEITH LUNA (Affiliate) <small>Digitally signed by KEITH LUNA (Affiliate) Date: 2022.03.18 09:15:27 -06'00'</small>	<i>Signature</i>	<i>Date</i>

**This document does not contain scientific or technical information  
DUSA Designator: RADPRO**

**NOTE**

This document contains instructions for all three OJT training roles: Instructor, Trainee, and Evaluator.

Section 1, ***OJT Instructor Guide***, provides information for developing and teaching OJT.

Section 2, ***OJT Trainee Guide***, contains everything a trainee needs to prepare for training and evaluation.

Section 3, ***OJT Evaluator Guide***, provides rules and guidelines to evaluate a trainee properly.

Section 4, ***Trainee Evaluation of OJT Instruction and Evaluation***.

Section 5, ***Unsatisfactory OJT Evaluation with Remediation Steps***.

## Revision Log

Rev. No.	Date	Description of Change
1.0	5/4/2021	Initial release
2.0	3/14/2022	Revised OJT templates to improve LP information and updated procedural revisions.

## Section 1: OJT Instructor Guide

This *OJT Instructor Guide* provides all the information you need in order to understand the following:

- OJT Instructor and Evaluator Qualifications
- OJT Instruction Checklist
- OJT Lesson Plan

### OJT Instructor and Evaluator Qualifications

1. OJT instructors and evaluators must meet the following criteria:
  - Completed TSQP: OJT Instructor/Evaluator training requirements (Curriculum 411: TSQP—OJT Instructor/Evaluator)
2. SMEs cannot develop OJT instructional material unless they meet one of the two requirements below:
  - They have completed the appropriate instructional TSQP development courses (Curriculum: 409—TSQP Training Specialist [nonnuclear facility] or 10484: TSQP—Training Specialist [nuclear facility]) or
  - A qualified training specialist, training manager, or organizational representative reviews and approves the lesson plan.
3. An OJT instructor/evaluator is limited to training/evaluating no more than three trainees at a time. To exceed the limit for the trainee-to-instructor ratio, the responsible line manager, or designee, with advice from the instructor and operations workers, approves an appropriate ratio and documents the ratio in the *OJT Lesson Plan* or in a separate memorandum for special circumstances.

**Note:** *Candidates for certification in nuclear facilities must receive one-on-one OJT instruction with the exception of a student to instructor ratio of up to a 12 to 1 as set forth in RP memorandum RP-18-028.*

## OJT Lesson Plan

The lesson plan itself is divided into three training sections: introduction, body, and conclusion. Ensure that you cover all material in the order indicated, and remember to review and apply the training techniques that you learned during your TSQP instruction. During training, you can say the italicized wording *verbatim* or use similar wording that is more natural to you. In addition, remember to provide information for items that are **[bold and inside brackets]**.

### Introduction

- Brief Building Emergency Plan
- Provide an overview for the OJT instruction and evaluation process – **Prepare** (review of applicable procedures), **Practice** (Instructor guided practice and demonstrations), and **Present** (independent OJT evaluations)
- Ensure students have copies of the following materials:
  - a. RP-1-DP-48, Ludlum 139 with 43-32 Air Proportional Detector, rev. 0
  - b. RP-1-DP-25, Operational Checks of Alpha Survey Instruments, rev. 2
  - c. RP-1-Form-35, Alpha Survey Instrument Performance Test Log, rev. 0
  - d. RP-PROG-FORM-041, Instrument Check Tag, rev. 2

### Body

- **Procedure Review** – RP-1-DP-48, RP-1-DP-25, and the RP-1-Form-35. Review with students and ensure the following topics are emphasized:
  - a. Operational Characteristics of the Ludlum 139 with 43-32 Air Proportional Detector. (RP-1-DP-48, p. 2)
    - Types of radiation detected – Alpha
    - Range Selector: X1, X10, X100, X1000
    - Range of detector – 0-1,000,000 cpm
    - Type of detector – Air proportional detector
    - Active area of probe – 76 cm<sup>2</sup>
  - b. Maintenance of the Ludlum 139 with 43-32 Air Proportional Detector. (RP-1-DP-48 p. 2)
    - Types of batteries in use – 2 standard 'D' cells
  - c. Operational Checks of the Ludlum 139 with 43-32 Air Proportional Detector (RP-1-DP-25, p. 2)
    - Explain differences between performance tests and routine response checks
    - Establishing Reference Readings – When is this required?
  - d. Calculating contamination levels with readings from the Ludlum 139 with 43-32 Air Proportional Detector. (RP-1-DP-48, p. 4)
    - Calculating Contamination Levels, steps: 1-4

- **OJT Task Demonstration**

- Demonstrate all required performance steps
- Quiz students on knowledge questions
- Utilize an ACS-5 Calibrator, TMA/Eberline Alpha Calibration set, DU slug, or a simulated source to perform all measurements for Reference Readings and Response Checks and complete RP-1-Form-35
- **SAFETY: Anti-contamination gloves must be worn when handling radioactive sources**

***Conclusion***

- Review learning objectives with students
- Summarize key concepts and required steps for OJT evaluation
- **Ask trainees to complete the attached *OJT Course Evaluation* (Section 4)**
- Following the completion of OJT evaluation ensure copies are stored in the student's electronic and physical personnel files.

## Section 2: OJT Trainee Guide

This *OJT Trainee Guide* provides all the information you need in order to understand the following:

- Prerequisites
- The OJT Instruction and Evaluation Process
- Related Documents (questions and performances are based on these)
- PPE, Equipment, and Training Aids
- Objectives (what you will know or be able to do)
- Safety and Knowledge Questions and Answers (including Safety Basis, TSR, and/or DSA questions, if applicable)
- Task Performance Steps

### Prerequisites

Prior to this training, you must have successfully completed, or be enrolled in, the following training requirements:

- Curriculum 116, *Radiological Control Technician Requirements*

If you have **not** met these prerequisites, notify your supervisor, training coordinator, or training administrator, and complete the prerequisites.

### The OJT Instruction and Evaluation Process

An instructor will provide you with an *OJT Trainee Guide* for each OJT lesson. Before starting your instruction, you must read the remainder of this *OJT Trainee Guide*. Write down any questions that you have and bring them to the OJT training session.

During the instruction process, the suggestions below will help you succeed in learning the material:

- Ask your instructor questions in order to understand what you need to learn. When in doubt, ask!
- Ask for coaching and repeated demonstrations at any time during your instruction.
- Bring your *OJT Trainee Guide* to training sessions and refer to performance steps, safety and knowledge questions, and other related information as often as you like.
- Practice all performance activities for as long as you need to, until you feel comfortable doing the tasks.
- Ensure that you know and understand all the safety and knowledge questions in your *OJT Trainee Guide*. You will be asked these questions verbatim during your evaluation.

During your evaluation, the following rules apply:

- You may use your reference materials (such as procedures) during the evaluation, but you may **not** use your *OJT Trainee Guide*.
- The evaluator cannot answer any questions or coach you.
- Perform each task in accordance with the appropriate training/reference materials.
- In the event any problems arise beyond your knowledge and skills, step back and allow the evaluator to take control.
- Your performance criteria are as follows:
  - Failing to respond correctly to a safety-related question (including Safety Basis, Technical Safety Requirement [TSR], and/or Documented Safety Analysis [DSA] questions, if applicable) is an automatic failure of this evaluation. Safety questions require 100% accuracy.

- You must successfully respond to all knowledge questions 80% or better.
- Incorrectly **performing** any **critical step** or two (2) non-critical steps constitutes a failure of this evaluation.
- A **critical step** in a performance demonstration is defined as a step that, if incorrectly performed or performed in the wrong order, may cause the following: personnel injury or a safety issue; equipment damage or cause a TSR and/or; significant recovery time.
- The OJT evaluator **must** record any error serious enough to warrant discontinuing the training session or a failure of a task/subtask evaluation.

### Related Documents

RELATED DOCUMENTS
The documents below provide the basis for all knowledge and safety questions, as well as performance of tasks.
<ul style="list-style-type: none"><li>• <b>RP-1-DP-48 Ludlum 139 with 43-32 Air Proportional Detector, rev. 0</b></li><li>• <b>RP-1-DP-25, Operational Checks of Alpha Survey Instruments, rev. 2</b></li><li>• <b>RP-1-Form-35, Alpha Survey Instrument Performance Test Log, rev. 0</b></li><li>• <b>RP-PROG-FORM-041, Instrument Check Tag, rev. 2</b></li></ul>

### Objectives

OBJECTIVES
Terminal Objectives:  TO1: Given the need to operate the Ludlum 139 with 43-32 Air Proportional Detector, perform operational checks in accordance with RP-1-DP-25, <i>Operational Checks of Alpha Survey Instruments</i>  TO2: Given the need to survey for alpha contamination, operate the Ludlum 139 with 43-32 Air Proportional Detector in accordance with RP-1-DP-48, <i>Ludlum 139 with 43-32 Air Proportional Detector</i>
Enabling Objectives:  EO1: Perform the operational checks for the Ludlum 139 with 43-32 Air Proportional Detector EO2: Establish reference readings for the Ludlum 139 with 43-32 Air Proportional Detector EO3: Initiate the Instrument Check Tag for the Ludlum 139 with 43-32 Air Proportional Detector EO4: State the circumstances in which a routine response check is required for the Ludlum 139 with 43-32 Air Proportional Detector EO5: State the circumstances in which a performance test is required for the Ludlum 139 with 43-32 Air Proportional Detector EO6: Calculate contamination levels using the Ludlum 139 with 43-32 Air Proportional Detector

*Note: In order to complete this form, the OJT evaluator must initial in the Sat. or Unsat. columns as appropriate.*

### Task Performance Steps

#### **P1: Perform Operational (functional), Reference, and Response Checks for the Ludlum 139 with 43-32 Air Proportional Detector**

**EVALUATOR:** Ask the Trainee to “Perform an initial setup for the Ludlum 139 with 43-32 Air Proportional Detector.”

Performance Step	Sat.	Unsat.
<b>P1.1: Perform operational checks (functional checks) for the Ludlum 139 with 43-32 Air Proportional Detector. (RP-1-DP-25)</b> Acceptable performance: <ul style="list-style-type: none"> <li>4.1 Steps: 1-3</li> </ul>		
<b>P1.3: Establish reference readings for the Ludlum 139 with 43-32 Air Proportional Detector. (RP-1-DP-25)</b> Acceptable Response: <ul style="list-style-type: none"> <li>Section 4.2, steps: 1-11</li> <li>Properly fills out all applicable blocks on RP-1-Form-35</li> </ul> <b>Safety: Gloves must be worn when handling sources</b>		(S)
<b>P1.4: Establish response check data for the Ludlum 139 with 43-32 Air Proportional Detector. (RP-1-DP-25)</b> Acceptable Response: <ul style="list-style-type: none"> <li>Section 4.3, steps: 1-5</li> <li>Section 4.4, steps: 1-5</li> <li>Properly fills out all applicable information on RP-PROG-FORM-041</li> </ul> <b>Safety: Gloves must be worn when handling sources</b>		(S)
<b>K1.1: Demonstrate knowledge of the times a performance test are required for the Ludlum 139 with 43-32 Air Proportional Detector. (RP-1-DP-25, section 4.5)</b> Acceptable Response: <ul style="list-style-type: none"> <li>After changing batteries, cables, or probes.</li> <li>If the instrument fails a response check</li> <li>Any time the proper response of the instrument is in question</li> <li>Facility specific RMI</li> </ul>		

Performance Step	Sat.	Unsat.
<b>K1.2: Demonstrate knowledge of the times a response check of the instrument is required.</b> (RP-1-DP-25, section 4.4) Acceptable performance: <ul style="list-style-type: none"> <li>• Prior to the first use of the day or shift</li> <li>• During intermittent use conditions</li> <li>• Several times a day during continuous use</li> </ul>		
<b>P1.5: Perform a probe size correction for the Ludlum 139 with 43-32 Air Proportional Detector.</b> (RP-1-DP-48, p. 4) <u>Evaluator shall provide the trainee with alpha results in cpm</u> Acceptable performance: <ul style="list-style-type: none"> <li>• Calculating Contamination Levels, steps 1-3</li> </ul>		

When the trainee completes the **instructional** portion of this on-the-job training, both the instructor and the trainee must sign at the same time and date. When the trainee completes all **evaluation**, both the evaluator and the trainee must sign at the same time and date. (If more than one instructor or evaluator is involved, add names and signatures.)

Trainee Name (print):	Z#:
Trainee Post-Instruction Signature:	Date:
Trainee Post-Evaluation Signature:	Date:
Instructor Name (print):	Z#:
Instructor Signature:	Date:
Evaluator Name (print):	Z#:
Evaluator Signature:	Date:

## Section 3: OJT Evaluator Guide

This *OJT Evaluator Guide* provides all the information you need in order to understand the following:

- Instructions to the OJT Evaluator
- Evaluation criteria
- *Unsatisfactory OJT Evaluation with Remediation Steps* form (section 5)

### Instructions to the OJT Evaluator

#### CAUTION

**DO NOT ALLOW TRAINEE TO MAKE AN ERROR THAT WOULD PUT PERSONNEL, EQUIPMENT, THE ENVIRONMENT, OR THE FACILITY IN JEOPARDY AT ANY TIME DURING THIS EVALUATION.**

- ☐ Review evaluation rules with the trainee, and ask if there are any questions before beginning the evaluation.
- ☐ During the evaluation, do not allow the worker to ask questions; do not coach the worker in any way. The worker may consult reference materials (**except** the *OJT Trainee Guide*) at any time during the performance evaluation but may not ask you to clarify on any task or item.

#### NOTE

The evaluator may require the trainee to talk through a performance step before performing it. The evaluator must take care not to agree or disagree with the trainee's statements; this would be coaching. However, an exact repeat-back is not coaching.

In cases where evaluation will involve the use of radioactive sources, utilize the following methods in the priority listed below.

1. Use actual sources.
2. Use Teletrix or other instrument simulators.
3. Supply the trainee with simulated source values.

- During the performance evaluation, ask safety and knowledge questions **verbatim**, including Safety Basis, TSR, and DSA questions, if applicable. Evaluate only knowledge and safety questions, as well as performance steps, that are included in the *OJT Trainee Guide*.
- As a trainee responds/performs acceptably to a question or performance task, write your initials in the "Sat." column. When every item is a "Sat.", submit the completed copy to your training coordinator or training administrator.
- If a trainee fails to answer safety/knowledge questions, or performs tasks/subtasks improperly, write your initials in the "Unsat." column. For all failures, you must complete the *Unsatisfactory OJT Evaluation with Remediation Steps* form (section 5) and submit it to the instructor as well as to your training coordinator or training administrator for recordkeeping purposes.

### Evaluation Criteria

Evaluate the trainee using the criteria below.

- If a trainee responds incorrectly to a safety-related question it is an automatic failure of this evaluation. Safety questions require 100% accuracy (including Safety Basis, TSR, and/or DSA questions, if applicable).
- The trainee must successfully respond to all knowledge questions with 80% or better accuracy.
- Incorrectly **performing** one (1) critical step or two (2) non-critical steps constitutes a failure of this evaluation.
- A **critical step** in a performance demonstration is defined as a step that, if incorrectly performed or performed in the wrong order, may cause the following: personnel injury or a safety issue; equipment damage or cause a Technical Safety Requirement/Review (TSR), and/or; significant recovery time.

**After completion of the OJT; The Evaluator shall complete the following for credit and record retention:**

- 1) Make a copy of the original record and retain at the facility. All OJT records will transfer with the RCT.
- 2) Email a scanned copy of the OJT to [RCT-OJT@lanl.gov](mailto:RCT-OJT@lanl.gov)
  - a. [The email must contain a complete copy of Sections 2 and 4 for credit.](#)
  - b. A copy of section 5 must also be included in cases where remediation is required.

Send the ORIGINAL record to the RP-PROG Group Admin office, MS K788.

## Trainee Evaluation of OJT Instruction and Evaluation

Please take the time to complete the following course evaluation after you have completed the OJT performance evaluation. Your feedback is important to assist us with the effectiveness of this course.

<b>OJT #43125</b>	<b>Title: Operation of the Ludlum 139 with Air Proportional Detector</b>
<b>Date:</b>	Instructor:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. This OJT was a good use of my time.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. This OJT will enable me to perform this task safely and correctly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. The learning objectives found in this OJT were appropriate to the task being trained.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. The performance evaluation portion of this OJT was effective at measuring how much I learned during the instructional portion of the OJT.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Rate your level of knowledge:	Low				High
Before the OJT instruction and evaluation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
After the OJT instruction and evaluation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If you marked "Disagree" or "Strongly Disagree" to any of the above, please let us know why (in detail):

What changes would you recommend to make to this OJT course more effective?

## Unsatisfactory OJT Evaluation with Remediation Steps

Task or Question #	Reason for failure	Remediation steps

Course Title: <b>Operation of the Ludlum 139 with Air Proportional Detector</b>	OJT #: <b>43125</b>
Trainee Name (print):	Z #:
Signature:	Date:
Evaluator Name (print):	Z #:
Signature:	Date:

1. **THE TRAINEE MAY NOT PERFORM THE *OJT TRAINEE GUIDE* TASKS IN HIS/HER JOB UNTIL PASSING THE EVALUATION FOR THOSE TASKS.** The only exception is if he/she is supervised directly by a person qualified for those tasks.
2. The evaluator must provide remediation according to the above "Remediation Steps." When ready, the trainee must be evaluated a second time. This process continues until the trainee passes the evaluation.
3. Submit this form to the appropriate training coordinator or training administrator to file the original in the trainee's training records.



## Organization Name

RP-PROG

## OJT Course Title

RCT: Operation of the Eberline ESP-1 with HP-210, HP-260, and HP-360 Detectors

## Course Number

43126

## Revision Number

2.0

Developer	Timothy Vance <i>Developer</i>	TIMOTHY VANCE (Affiliate) <small>Digitally signed by TIMOTHY VANCE (Affiliate) Date: 2022.04.18 13:00:06 -06'00'</small>	<i>Signature</i>	<i>Date</i>
Subject Matter Review	Justin Gillilan <i>Subject Matter Expert</i>	Justin Gillilan <small>Digitally signed by Justin Gillilan Date: 2022.04.18 15:18:54 -06'00'</small>	<i>Signature</i>	<i>Date</i>
Approval	Keith Luna <i>RP Programs Team Leader</i>	KEITH LUNA (Affiliate) <small>Digitally signed by KEITH LUNA (Affiliate) Date: 2022.04.19 13:40:29 -06'00'</small>	<i>Signature</i>	<i>Date</i>

This document does not contain scientific or technical information  
DUSA Designator: RADPRO

### NOTE

This document contains instructions for all three OJT training roles: Instructor, Trainee, and Evaluator.

Section 1, ***OJT Instructor Guide***, provides information for developing and teaching OJT.

Section 2, ***OJT Trainee Guide***, contains everything a trainee needs to prepare for training and evaluation.

Section 3, ***OJT Evaluator Guide***, provides rules and guidelines to evaluate a trainee properly.

Section 4, ***Trainee Evaluation of OJT Instruction and Evaluation***.

Section 5, ***Unsatisfactory OJT Evaluation with Remediation Steps***.

## Revision Log

Rev. No.	Date	Description of Change
1.0	5/18/2021	Initial release
2.0	4/14/2022	Revised OJT templates to improve LP information and updated procedural revisions

## Section 1: OJT Instructor Guide

This *OJT Instructor Guide* provides all the information you need in order to understand the following:

- OJT Instructor and Evaluator Qualifications
- OJT Instruction Checklist
- OJT Lesson Plan

### OJT Instructor and Evaluator Qualifications

1. OJT instructors and evaluators must meet the following criteria:
  - Completed TSQP: OJT Instructor/Evaluator training requirements (Curriculum 411: TSQP—OJT Instructor/Evaluator)
2. SMEs cannot develop OJT instructional material unless they meet one of the two requirements below:
  - They have completed the appropriate instructional TSQP development courses (Curriculum: 409—TSQP Training Specialist [nonnuclear facility] or 10484: TSQP—Training Specialist [nuclear facility]) or
  - A qualified training specialist, training manager, or organizational representative reviews and approves the lesson plan.
3. An OJT instructor/evaluator is limited to training/evaluating no more than three trainees at a time. To exceed the limit for the trainee-to-instructor ratio, the responsible line manager, or designee, with advice from the instructor and operations workers, approves an appropriate ratio and documents the ratio in the *OJT Lesson Plan* or in a separate memorandum for special circumstances.

**Note:** *Candidates for certification in nuclear facilities must receive one-on-one OJT instruction with the exception of a student to instructor ratio of up to a 12 to 1 as set forth in RP memorandum RP-18-028.*

### OJT Lesson Plan

The lesson plan itself is divided into three training sections: introduction, body, and conclusion. Ensure that you cover all material in the order indicated and remember to review and apply the training techniques that you learned during your TSQP instruction. During training, you can say the italicized wording *verbatim* or use similar wording that is more natural to you. In addition, remember to provide information for items that are **[bold and inside brackets]**.

#### Introduction

- Brief Building Emergency Plan
- Provide an overview for the OJT instruction and evaluation process – **Prepare** (review of applicable procedures), **Practice** (Instructor guided practice and demonstrations), and **Present** (independent OJT evaluations)
- Ensure students have copies of the following materials (most current revision on EDRMS):
  - a. RP-1-DP-74, Eberline ESP-1
  - b. RP-1-DP-27, Operational Checks of Beta/Gamma Survey Instruments
  - c. RP-1-Form-34, Beta/Gamma Survey Instrument Performance Test Log
  - d. RP-PROG-FORM-041, Instrument Check Tag

## **Body**

- **Procedure Review** – RP-1-DP-74, RP-1-DP-27, and RP-1-FORM-34. Review with students and ensure the following topics are emphasized:
  - a. Operational Characteristics of the Eberline ESP-1 with HP-210, HP-260, and HP-360 detectors (RP-1-DP-074, p. 8/15)
    - Types of contamination detected – Alpha, Beta, and Gamma
    - Type of detector – Geiger Mueller
    - Detector surface area – 15.5 cm<sup>2</sup>
  - Field Maintenance (RP-1-DP-74, p. 24-25)
    - Types of batteries in use – six “C” cell batteries
    - ESP-1 and attached detector are married
  - b. Operational Checks of the Eberline ESP-1 with HP-210, HP-260, and HP-360 detectors (RP-1-DP-27 and RP-1-Form-34)
    - Explain the differences between performance tests and routine response checks
    - Establishing Reference Readings – When is this required?
  - c. Operation of the Eberline ESP-1 with HP-210, HP-260, and HP-360 detectors (RP-1-DP-74, p. 22-24)
    - Explain operation in ratemeter mode
    - Explain operation in scaler mode
- **OJT Task Demonstration**
  - Demonstrate all required performance steps
  - Perform “C” cell battery replacement
  - Quiz students on knowledge questions
  - Utilize a Sr-90 Calibrator and DU slug or simulated sources to perform all measurements for reference readings and response checks, and complete RP-1-Form-34
  - SAFETY: Anti-contamination gloves must be worn when handling radioactive sources

## **Conclusion**

- Review learning objectives with students
- Summarize key concepts and required steps for OJT evaluation
- **Ask trainees to complete the attached OJT Course Evaluation (Section 4).**
- Following the completion of OJT evaluation ensure copies are stored in the student’s electronic and physical personnel files

## Section 2: OJT Trainee Guide

This *OJT Trainee Guide* provides all the information you need in order to understand the following:

- Prerequisites
- The OJT Instruction and Evaluation Process
- Related Documents (questions and performances are based on these)
- PPE, Equipment, and Training Aids
- Objectives (what you will know or be able to do)
- Safety and Knowledge Questions and Answers (including Safety Basis, TSR, and/or DSA questions, if applicable)
- Task Performance Steps

### Prerequisites

Prior to this training, you must have successfully completed, or be enrolled in, the following training requirements:

- Curriculum 116, *Radiological Control Technician Requirements*

If you have **not** met these prerequisites, notify your supervisor, training coordinator, or training administrator, and complete the prerequisites.

### The OJT Instruction and Evaluation Process

An instructor will provide you with an *OJT Trainee Guide* for each OJT lesson. Before starting your instruction, you must read the remainder of this *OJT Trainee Guide*. Write down any questions that you have and bring them to the OJT training session.

**During the instruction process, the suggestions below will help you succeed in learning the material:**

- Ask your instructor questions in order to understand what you need to learn. When in doubt, ask!
- Ask for coaching and repeated demonstrations at any time during your instruction.
- Bring your *OJT Trainee Guide* to training sessions and refer to performance steps, safety and knowledge questions, and other related information as often as you like.
- Practice all performance activities for as long as you need to, until you feel comfortable doing the tasks.
- Ensure that you know and understand all the safety and knowledge questions in your *OJT Trainee Guide*. You will be asked these questions verbatim during your evaluation.

**During your evaluation, the following rules apply:**

- You may use your reference materials (such as procedures) during the evaluation, but you may **not** use your *OJT Trainee Guide*.
- The evaluator cannot answer any questions or coach you.
- Perform each task in accordance with the appropriate training/reference materials.
- In the event any problems arise beyond your knowledge and skills, step back and allow the evaluator to take control.
- Your performance criteria are as follows:
  - Failing to respond correctly to a safety-related question (including Safety Basis, Technical Safety Requirement [TSR], and/or Documented Safety Analysis [DSA] questions, if applicable) is an automatic failure of this evaluation. Safety questions require 100% accuracy.

- You must successfully respond to all knowledge questions 80% or better.
- Incorrectly **performing** any **critical step** or two (2) non-critical steps constitutes a failure of this evaluation.
- A **critical step** in a performance demonstration is defined as a step that, if incorrectly performed or performed in the wrong order, may cause the following: personnel injury or a safety issue; equipment damage or cause a TSR and/or; significant recovery time.
- The OJT evaluator **must** record any error serious enough to warrant discontinuing the training session or a failure of a task/subtask evaluation.

### Related Documents

RELATED DOCUMENTS
<p>The documents below provide the basis for all knowledge and safety questions, as well as performance of tasks.</p> <ul style="list-style-type: none"><li>• <b>RP-1-DP-74, <i>Eberline ESP-1</i></b></li><li>• <b>RP-1-DP-27, <i>Operational Checks of Beta/Gamma Survey Instruments</i></b></li><li>• <b>RP-1-Form-34, <i>Beta/Gamma Survey Instrument Performance Test Log</i></b></li><li>• <b>RP-PROG-FORM-041, <i>Instrument Check Tag</i></b></li></ul>

### Objectives

OBJECTIVES
<p>Terminal Objectives:</p> <p>TO1: Given the need to operate the Eberline ESP-1, perform the initial setup in accordance with RP-1-DP-27, <i>Operational Checks of Beta/Gamma Survey Instruments</i></p>
<p>Enabling Objectives:</p> <p>EO1: Perform operational checks for the Eberline ESP-1 with HP-210, HP-260, or HP-360 detector</p> <p>EO2: Establish reference readings for the Eberline ESP-1 with HP-210, HP-260, or HP-360 detector</p> <p>EO3: Initiate an Instrument Check Tag for the Eberline ESP-1 with HP-210, HP-260, or HP-360 detector</p> <p>EO4: State the circumstances in which a routine response check is required for the Eberline ESP-1</p> <p>EO5: State the circumstances in which a performance test is required for the Eberline ESP-1</p> <p>EO6: Determine the Minimum Detectable Activity (MDA) for the Eberline ESP-1</p>

*Note: In order to complete this form, the OJT evaluator must initial in the Sat. or Unsat. columns as appropriate.*

### Task Performance Steps

**P1: Perform an initial setup for the Eberline ESP-1 with HP-210, HP-260, or HP-360 detector.**

**EVALUATOR:** Ask the Trainee to “Perform an initial setup for the Eberline ESP-1 with HP-210, HP-260, or HP-360 detector.”

Performance Step	Sat.	Unsat.
<b>P1.1: Perform operational checks (functional checks) for the Eberline ESP-1 with HP-210, HP-260, or HP-360 detector. (RP-1-DP-27 and RP-1-DP-74)</b>  Acceptable performance: <ul style="list-style-type: none"> <li>RP-1-DP-27, 4.1, steps 1-3</li> <li>RP-1-DP-74, 8.2, step 4: Verify proper information displayed on instrument</li> </ul>		
<b>P1.2: Establish reference readings for the Eberline ESP-1 with HP-210, HP-260, or HP-360 detector. (RP-1-DP-27)</b>  Acceptable Response: <ul style="list-style-type: none"> <li>Section 4.2, steps 1-16</li> <li>Properly fills out all applicable blocks on RP-1-FORM-34</li> </ul> <b>Safety: Gloves must be worn when handling radioactive sources</b>		(S)
<b>P1.3: Establish response check data for the Eberline ESP-1 with HP-210, HP-260, or HP-360 detector. (RP-1-DP-27)</b>  Acceptable Response: <ul style="list-style-type: none"> <li>Section 4.3, steps 1-6</li> <li>Properly fills out all applicable information on RP-1-FORM-041</li> </ul> <b>Safety: Gloves must be worn when handling radioactive sources</b>		(S)
<b>K1.1: Demonstrate knowledge of the times a performance test is required for the Eberline ESP-1 with HP-210, HP-260, and HP-360 detectors. (RP-1-DP-27)</b>  <i>“When is a performance test required for the Eberline ESP-1 with various detectors?”</i>  Acceptable Response: <ul style="list-style-type: none"> <li>After changing batteries, cables, or probes</li> <li>As specified in the facility specific RMIs</li> <li>If the instrument fails a response check</li> <li>Any time the proper response of the instrument is in question</li> </ul>		

**P2: Operation of the Eberline ESP-1 with HP-210, HP-260, or HP-360 detector.**

**EVALUATOR:** Ask the Trainee to “Calculate the MDA operate the Eberline ESP-1 with HP-210, HP-260, or HP-360 detectors.

Performance Step	Sat.	Unsat.
<b>K2.1: Demonstrate knowledge of the times a response check of the Eberline ESP-1 with HP-210, HP-260, and HP-360 detectors is required.</b> (RP-1-DP-27, section 4.4) <i>“When is a response check required for the Eberline ESP-1 with various detectors?”</i> Acceptable performance: <ul style="list-style-type: none"> <li>• Prior to the first use of the day or shift</li> <li>• During intermittent use conditions</li> <li>• Several times a day during continuous use</li> </ul>		
<b>P2.1: Determine the MDA for the Eberline ESP-1 with HP-210, HP-260, and HP-360 detectors.</b> (RP-1-DP-074) <u>Evaluator shall provide the trainee with background results in dpm</u> Acceptable performance: <ul style="list-style-type: none"> <li>• Section 7.1.3</li> </ul>		

When the trainee completes the **instructional** portion of this on-the-job training, both the instructor and the trainee must sign at the same time and date. When the trainee completes all **evaluation**, both the evaluator and the trainee must sign at the same time and date. (If more than one instructor or evaluator is involved, add names and signatures.)

Trainee Name (print):	Z#:
Trainee Post-Instruction Signature:	Date:
Trainee Post-Evaluation Signature:	Date:
Instructor Name (print):	Z#:
Instructor Signature:	Date:
Evaluator Name (print):	Z#:
Evaluator Signature:	Date:

## Section 3: OJT Evaluator Guide

This *OJT Evaluator Guide* provides all the information you need in order to understand the following:

- Instructions to the OJT Evaluator
- Evaluation criteria
- *Unsatisfactory OJT Evaluation with Remediation Steps* form (section 5)

### Instructions to the OJT Evaluator

#### CAUTION

**DO NOT ALLOW TRAINEE TO MAKE AN ERROR THAT WOULD PUT PERSONNEL, EQUIPMENT, THE ENVIRONMENT, OR THE FACILITY IN JEOPARDY AT ANY TIME DURING THIS EVALUATION.**

- ☐ Review evaluation rules with the trainee and ask if there are any questions before beginning the evaluation.
- ☐ During the evaluation, do not allow the worker to ask questions; do not coach the worker in any way. The worker may consult reference materials (**except** the *OJT Trainee Guide*) at any time during the performance evaluation but may not ask you to clarify on any task or item.

#### NOTE

The evaluator may require the trainee to talk through a performance step before performing it. The evaluator must take care not to agree or disagree with the trainee's statements; this would be coaching. However, an exact repeat-back is not coaching.

In cases where evaluation will involve the use of radioactive sources, utilize the following methods in the priority listed below.

1. Use actual sources.
2. Use Teletrix or other instrument simulators.
3. Supply the trainee with simulated source values.

- During the performance evaluation, ask safety and knowledge questions **verbatim**, including Safety Basis, TSR, and DSA questions, if applicable. Evaluate only knowledge and safety questions, as well as performance steps, that are included in the *OJT Trainee Guide*.
- As a trainee responds/performs acceptably to a question or performance task, write your initials in the "Sat." column. When every item is a "Sat.", submit the completed copy to your training coordinator or training administrator.
- If a trainee fails to answer safety/knowledge questions, or performs tasks/subtasks improperly, write your initials in the "Unsat." column. For all failures, you must complete the *Unsatisfactory OJT Evaluation with Remediation Steps* form (section 5) and submit it to the instructor as well as to your training coordinator or training administrator for recordkeeping purposes.

### Evaluation Criteria

Evaluate the trainee using the criteria below.

- If a trainee responds incorrectly to a safety-related question it is an automatic failure of this evaluation. Safety questions require 100% accuracy (including Safety Basis, TSR, and/or DSA questions, if applicable).
- The trainee must successfully respond to all knowledge questions with 80% or better accuracy.
- Incorrectly **performing** one (1) critical step or two (2) non-critical steps constitutes a failure of this evaluation.
- A **critical step** in a performance demonstration is defined as a step that, if incorrectly performed or performed in the wrong order, may cause the following: personnel injury or a safety issue; equipment damage or cause a Technical Safety Requirement/Review (TSR), and/or; significant recovery time.

**After completion of the OJT; The Evaluator shall complete the following for credit and record retention:**

- 1) Make a copy of the original record and retain at the facility. All OJT records will transfer with the RCT.
- 2) Email a scanned copy of the OJT to [RCT-OJT@lanl.gov](mailto:RCT-OJT@lanl.gov)
  - a. [The email must contain a complete copy of Sections 2 and 4 for credit.](#)
  - b. A copy of section 5 must also be included in cases where remediation is required.

Send the ORIGINAL record to the RP-PROG Group Admin office, MS K788.

Please take the time to complete the following course evaluation after you have completed the OJT performance evaluation. Your feedback is important to assist us with the effectiveness of this course.

OJT #43126	Title: Operation of the Eberline ESP-1 with HP-210, HP-260, and HP-360 Detectors
Date:	Instructor:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. This OJT was a good use of my time.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. This OJT will enable me to perform this task safely and correctly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. The learning objectives found in this OJT were appropriate to the task being trained.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. The performance evaluation portion of this OJT was effective at measuring how much I learned during the instructional portion of the OJT.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Rate your level of knowledge:	Low				High
Before the OJT instruction and evaluation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
After the OJT instruction and evaluation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If you marked "Disagree" or "Strongly Disagree" to any of the above, please let us know why (in detail):

---

What changes would you recommend to make to this OJT course more effective?

## Unsatisfactory OJT Evaluation with Remediation Steps

Task or Question #	Reason for failure	Remediation steps

Course Title: Operation of the Eberline ESP-1 with HP-210, HP-260, and HP-360 Detectors	OJT #: 43126
Trainee Name (print):	Z #:
Signature:	Date:
Evaluator Name (print):	Z #:
Signature:	Date:

1. **THE TRAINEE MAY NOT PERFORM THE *OJT TRAINEE GUIDE* TASKS IN HIS/HER JOB UNTIL PASSING THE EVALUATION FOR THOSE TASKS.** The only exception is if he/she is supervised directly by a person qualified for those tasks.
2. The evaluator must provide remediation according to the above "Remediation Steps." When ready, the trainee must be evaluated a second time. This process continues until the trainee passes the evaluation.
3. Submit this form to the appropriate training coordinator or training administrator to file the original in the trainee's training records.



### Organization Name

RP-PROG

### OJT Course Title

RCT: Operation of Ludlum 2929, 3030, and 3030E Sample Counters

### Course Number

46711

Developer	<u>Timothy Vance</u> <i>Developer</i>	<u>TIMOTHY VANCE (Affiliate)</u> <small>Digitally signed by TIMOTHY VANCE (Affiliate) Date: 2022.05.02 09:41:01 -06'00'</small>	<u>Signature</u>	<u>Date</u>
Subject Matter Review	<u>Justin Gillilan</u> <i>Subject Matter Expert</i>	<u>Justin Gillilan</u> <small>Digitally signed by Justin Gillilan Date: 2022.05.02 15:35:25 -06'00'</small>	<u>Signature</u>	<u>Date</u>
Approval	<u>Keith Luna</u> <i>RP Programs Team Leader</i>	<u>KEITH LUNA (Affiliate)</u> <small>Digitally signed by KEITH LUNA (Affiliate) Date: 2022.05.02 15:40:14 -06'00'</small>	<u>Signature</u>	<u>Date</u>

### Revision Number

2.0

This document does not contain scientific or technical information  
DUSA Designator: RADPRO

#### NOTE

This document contains instructions for all three OJT training roles: Instructor, Trainee, and Evaluator.

Section 1, **OJT Instructor Guide**, provides information for developing and teaching OJT.

Section 2, **OJT Trainee Guide**, contains everything a trainee needs to prepare for training and evaluation.

Section 3, **OJT Evaluator Guide**, provides rules and guidelines to evaluate a trainee properly.

Section 4, **Trainee Evaluation of OJT Instruction and Evaluation**.

Section 5, **Unsatisfactory OJT Evaluation with Remediation Steps**.

### Revision Log

Rev. No.	Date	Description of Change
0.0	5/28/2020	Initial release
1.0	9/17/2021	<ul style="list-style-type: none"><li>• Update SAT document format.</li><li>• Replace all Terminal and Enabling Objectives.</li><li>• Restructured all performance and knowledge steps to meet objectives.</li></ul>
2.0	4/19/2022	Revised OJT templates to improve LP information and updated procedural revisions

## Section 1: OJT Instructor Guide

This *OJT Instructor Guide* provides all the information you need in order to understand the following:

- OJT Instructor and Evaluator Qualifications
- OJT Instruction Checklist
- OJT Lesson Plan

### OJT Instructor and Evaluator Qualifications

1. OJT instructors and evaluators must meet the following criteria:
  - Completed TSQP: OJT Instructor/Evaluator training requirements (Curriculum 411: TSQP—OJT Instructor/Evaluator)
2. SMEs cannot develop OJT instructional material unless they meet one of the two requirements below:
  - They have completed the appropriate instructional TSQP development courses (Curriculum: 409—TSQP Training Specialist [nonnuclear facility] or 10484: TSQP—Training Specialist [nuclear facility]) or
  - A qualified training specialist, training manager, or organizational representative reviews and approves the lesson plan.
3. An OJT instructor/evaluator is limited to training/evaluating no more than three trainees at a time. To exceed the limit for the trainee-to-instructor ratio, the responsible line manager, or designee, with advice from the instructor and operations workers, approves an appropriate ratio and documents the ratio in the *OJT Lesson Plan* or in a separate memorandum for special circumstances.

**Note:** *Candidates for certification in nuclear facilities must receive one-on-one OJT instruction with the exception of a student to instructor ratio of up to a 12 to 1 as set forth in RP memorandum RP-18-028.*

### OJT Lesson Plan

The lesson plan itself is divided into three training sections: introduction, body, and conclusion. Ensure that you cover all material in the order indicated, and remember to review and apply the training techniques that you learned during your TSQP instruction. During training, you can say the italicized wording *verbatim* or use similar wording that is more natural to you. In addition, remember to provide information for items that are **[bold and inside brackets]**.

#### *Introduction*

- Brief Building Emergency Plan
- Provide an overview for the OJT instruction and evaluation process – **Prepare** (review of applicable procedures), **Practice** (Instructor guided practice and demonstrations), and **Present** (independent OJT evaluations)
- Ensure students have copies of the following materials:
  - a. RP-PROG-TP-500, Ludlum 2929, 3030, and 3030E Sample Counters
  - b. RP-PROG-FORM-032, Ludlum 2929, 3030, and 3030E Performance Check Log
  - c. RP-PROG-FORM-033, Ludlum 2929, 3030, and 3030E Sample Count Log

## **Body**

- **Procedure Review** – RP-PROG-TP-500. Review with students and ensure the following topics are emphasized:
  - a. Operational Purpose, Precautions and Limitations, of the Ludlum 2929, 3030, and 3030E (RP-PROG-TP-500, section 1.1 and 2.0)
  - b. Controls and Indicators (RP-PROG-TP-500, section 4.1.1, 4.2.1, 4.3.1)
    - Table 1. Ludlum 3030 Control Descriptions
    - Table 2. Ludlum 2929 Control Descriptions
    - Table 3. Ludlum 3030E Control Descriptions
  - c. Establishing Acceptance Criteria (Reference Readings) of the Ludlum 2929, 3030, and 3030E (RP-PROG-TP-500, section 4.4.2, steps 1-10)
  - d. Performance Check (RP-PROG-TP-500, section 4.5)
  - e. Sample Counting (RP-PROG-TP-500, section 4.6, steps 1-12)
- **OJT Task Demonstration**
  - Demonstrate all required performance steps
  - Discuss why this instrument is useful for RCT applications (free-release surveys)
  - Utilize a LANL source box Am-241 source and Ci-36 source or simulated sources to perform all measurements for Reference Readings and Response Checks and complete RP-PROG-FORM-032
  - **SAFETY:** Anti-contamination gloves must be worn when handling radioactive sources

## **Conclusion**

- Review learning objectives with students
- Summarize key concepts and required steps for OJT evaluation
- **Ask trainees to complete the attached OJT Course Evaluation (Section 4).**
- Following the completion of OJT evaluation ensure copies are stored in the student's electronic and physical personnel files

## Section 2: OJT Trainee Guide

This *OJT Trainee Guide* provides all the information you need in order to understand the following:

- Prerequisites
- The OJT Instruction and Evaluation Process
- Related Documents (questions and performances are based on these)
- PPE, Equipment, and Training Aids
- Objectives (what you will know or be able to do)
- Safety and Knowledge Questions and Answers (including Safety Basis, TSR, and/or DSA questions, if applicable)
- Task Performance Steps

### Prerequisites

Prior to this training, you must have successfully completed, or be enrolled in, the following training requirements:

- Curriculum 116, *Radiological Control Technician Requirements*

If you have **not** met these prerequisites, notify your supervisor, training coordinator, or training administrator, and complete the prerequisites.

### The OJT Instruction and Evaluation Process

An instructor will provide you with an *OJT Trainee Guide* for each OJT lesson. Before starting your instruction, you must read the remainder of this *OJT Trainee Guide*. Write down any questions that you have and bring them to the OJT training session.

During the instruction process, the suggestions below will help you succeed in learning the material:

- Ask your instructor questions in order to understand what you need to learn. When in doubt, ask!
- Ask for coaching and repeated demonstrations at any time during your instruction.
- Bring your *OJT Trainee Guide* to training sessions and refer to performance steps, safety and knowledge questions, and other related information as often as you like.
- Practice all performance activities for as long as you need to, until you feel comfortable doing the tasks.
- Ensure that you know and understand all the safety and knowledge questions in your *OJT Trainee Guide*. You will be asked these questions verbatim during your evaluation.

During your evaluation, the following rules apply:

- You may use your reference materials (such as procedures) during the evaluation, but you may **not** use your *OJT Trainee Guide*.
- The evaluator cannot answer any questions or coach you.
- Perform each task in accordance with the appropriate training/reference materials.
- In the event any problems arise beyond your knowledge and skills, step back and allow the evaluator to take control.
- Your performance criteria are as follows:
  - Failing to respond correctly to a safety-related question (including Safety Basis, Technical Safety Requirement [TSR], and/or Documented Safety Analysis [DSA] questions, if applicable) is an automatic failure of this evaluation. Safety questions require 100% accuracy.

- You must successfully respond to all knowledge questions 80% or better.
- Incorrectly **performing** any **critical step** or two (2) non-critical steps constitutes a failure of this evaluation.
- A **critical step** in a performance demonstration is defined as a step that, if incorrectly performed or performed in the wrong order, may cause the following: personnel injury or a safety issue; equipment damage or cause a TSR and/or; significant recovery time.
- The OJT evaluator **must** record any error serious enough to warrant discontinuing the training session or a failure of a task/subtask evaluation.

### Related Documents

RELATED DOCUMENTS
The documents below provide the basis for all knowledge and safety questions, as well as performance of tasks. <ul style="list-style-type: none"><li>• <b>RP-PROG-TP-500, Ludlum 2929, 3030, and 3030E Sample Counters</b></li><li>• <b>RP-PROG-FORM-032, Ludlum 2929, 3030, and 3030E Performance Check Log</b></li><li>• <b>RP-PROG-FORM-033, Ludlum 2929, 3030, and 3030E Sample Count Log</b></li></ul>

### Objectives

OBJECTIVES
Terminal Objectives:  TO1: Given the need to operate Ludlum 2929, 3030, and 3030E Sample Counters, perform the initial setup in accordance with RP-PROG-TP-500, <i>Ludlum 2929, 3030, and 3030E Sample Counters</i>  TO2: Given the need to survey for alpha and beta contamination, operate the Ludlum 2929, 3030, and 3030E Sample Counters in accordance with RP-PROG-TP-500, <i>Ludlum 2929, 3030, and 3030E Sample Counters</i>
Enabling Objectives:  EO1: Perform an operational (functional) check of the Ludlum 2929, 3030, or 3030E Sample Counter EO2: Establish reference readings for the Ludlum 2929, 3030 or 3030E Sample Counter EO3: State the acceptable background criteria when using the Ludlum 2929, 3030, or 3030E Sample Counter EO4: State when performance checks are required for the Ludlum 2929, 3030, or 3030E Sample Counters EO5: Perform a Sample Count with a Ludlum 2929, 3030, or 3030E Sample Counter

*Note: In order to complete this form, the OJT evaluator must initial in the Sat. or Unsat. columns as appropriate.*

### Task Performance Steps

#### P1: Perform Operational (functional) and Response Checks for the Ludlum 2929, 3030, or 3030E Sample Counters.

**EVALUATOR:** Ask the Trainee to “Perform an initial setup for the Ludlum 2929, 3030, or 3030E Sample Counters.”

Performance Step	Sat.	Unsat.
<b>P1.1: Perform operational checks (functional) checks for the Ludlum 2929, 3030, or 3030E Sample Counters.</b> (RP-PROG-TP-500, section 4.4.2, step 1) Acceptable performance: <ul style="list-style-type: none"> <li>• Verify the instrument is in calibration</li> <li>• Check for physical/ electrical defects that may interfere with normal operation, including cables</li> <li>• Inspect the sample tray to ensure it is opening, closing, and locking properly</li> </ul>		
<b>P1.2: Establish reference readings for the Ludlum 2929, 3030, or 3030E Sample Counters.</b> (RP-PROG-TP-500, section 4.4.2 and RP-PROG-FORM-032) Acceptable performance: <ul style="list-style-type: none"> <li>• Section 4.4.2, steps: 2-10</li> <li>• Properly fills out all applicable information on RP-PROG-FORM-032</li> </ul> <b>Safety: Gloves must be worn when handling sources</b>		
<b>K1.1: When is a performance check of the Ludlum 2929, 3030, or 3030E Sample Counters?</b> (RP-PROG-TP-500, section 4.5.1) Acceptable response: <ul style="list-style-type: none"> <li>• Prior to the first use of the day or shift</li> <li>• After relocation of the instrument</li> <li>• After a severe physical shock to the instrument (e.g., dropped)</li> <li>• At any time when the proper response of the instrument is in question</li> </ul>		
<b>P1.3: Perform a Sample Count on RP-PROG-FORM-033.</b> (RP-PROG-TP-500, section 4.6) <u>Instructor will give one sample with alpha and beta Total Sample Count results</u> Acceptable performance: <ul style="list-style-type: none"> <li>• Section 4.6, steps: 2-11</li> <li>• Properly fills out all applicable information on RP-PROG-FORM-032</li> </ul>		
<b>K1.2: State the acceptable background criteria for the Ludlum 2929, 3030, or 3030E Sample Counters.</b> (RP-PROG-TP-500, section 4.4.2, step 5e) Acceptable response: <ul style="list-style-type: none"> <li>• Alpha background <math>\leq 1.5</math> cpm</li> <li>• Beta background <math>\leq 300</math> cpm</li> </ul>		

(S)

When the trainee completes the ***instructional*** portion of this on-the-job training, both the instructor and the trainee must sign at the same time and date. When the trainee completes all **evaluation**, both the evaluator and the trainee must sign at the same time and date. (If more than one instructor or evaluator is involved, add names and signatures.)

Trainee Name (print):	Z#:
Trainee Post-Instruction Signature:	Date:
Trainee Post-Evaluation Signature:	Date:
Instructor Name (print):	Z#:
Instructor Signature:	Date:
Evaluator Name (print):	Z#:
Evaluator Signature:	Date:

## Section 3: OJT Evaluator Guide

This *OJT Evaluator Guide* provides all the information you need in order to understand the following:

- Instructions to the OJT Evaluator
- Evaluation criteria
- *Unsatisfactory OJT Evaluation with Remediation Steps* form (section 5)

### Instructions to the OJT Evaluator

#### CAUTION

**DO NOT ALLOW TRAINEE TO MAKE AN ERROR THAT WOULD PUT PERSONNEL, EQUIPMENT, THE ENVIRONMENT, OR THE FACILITY IN JEOPARDY AT ANY TIME DURING THIS EVALUATION.**

- ☐ Review evaluation rules with the trainee and ask if there are any questions before beginning the evaluation.
- ☐ During the evaluation, do not allow the worker to ask questions; do not coach the worker in any way. The worker may consult reference materials (**except** the *OJT Trainee Guide*) at any time during the performance evaluation but may not ask you to clarify on any task or item.

#### NOTE

The evaluator may require the trainee to talk through a performance step before performing it. The evaluator must take care not to agree or disagree with the trainee's statements; this would be coaching. However, an exact repeat-back is not coaching.

In cases where evaluation will involve the use of radioactive sources, utilize the following methods in the priority listed below.

1. Use actual sources.
2. Use Teletrix or other instrument simulators.
3. Supply the trainee with simulated source values.

- During the performance evaluation, ask safety and knowledge questions **verbatim**, including Safety Basis, TSR, and DSA questions, if applicable. Evaluate only knowledge and safety questions, as well as performance steps, that are included in the *OJT Trainee Guide*.
- As a trainee responds/performs acceptably to a question or performance task, write your initials in the "Sat." column. When every item is a "Sat.", submit the completed copy to your training coordinator or training administrator.
- If a trainee fails to answer safety/knowledge questions, or performs tasks/subtasks improperly, write your initials in the "Unsat." column. For all failures, you must complete the *Unsatisfactory OJT Evaluation with Remediation Steps* form (section 5) and submit it to the instructor as well as to your training coordinator or training administrator for recordkeeping purposes.

### Evaluation Criteria

Evaluate the trainee using the criteria below.

- If a trainee responds incorrectly to a safety-related question it is an automatic failure of this evaluation. Safety questions require 100% accuracy (including Safety Basis, TSR, and/or DSA questions, if applicable).
- The trainee must successfully respond to all knowledge questions with 80% or better accuracy.
- Incorrectly **performing** one (1) critical step or two (2) non-critical steps constitutes a failure of this evaluation.
- A **critical step** in a performance demonstration is defined as a step that, if incorrectly performed or performed in the wrong order, may cause the following: personnel injury or a safety issue; equipment damage or cause a Technical Safety Requirement/Review (TSR), and/or; significant recovery time.

**After completion of the OJT; The Evaluator shall complete the following for credit and record retention:**

- 1) Make a copy of the original record and retain at the facility. All OJT records will transfer with the RCT.
- 2) Email a scanned copy of the OJT to [RCT-OJT@lanl.gov](mailto:RCT-OJT@lanl.gov)
  - a. The email must contain a complete copy of Sections 2 and 4 for credit.
  - b. A copy of section 5 must also be included in cases where remediation is required.

Send the ORIGINAL record to the RP-PROG Group Admin office, MS K788.

## Trainee Evaluation of OJT Instruction and Evaluation

Please take the time to complete the following course evaluation after you have completed the OJT performance evaluation. Your feedback is important to assist us with the effectiveness of this course.

OJT #46711	Title: Operation of Ludlum 2929, 3030, and 3030E Sample Counters
Date:	Instructor:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. This OJT was a good use of my time.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. This OJT will enable me to perform this task safely and correctly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. The learning objectives found in this OJT were appropriate to the task being trained.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. The performance evaluation portion of this OJT was effective at measuring how much I learned during the instructional portion of the OJT.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Rate your level of knowledge:	Low				High
Before the OJT instruction and evaluation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
After the OJT instruction and evaluation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If you marked "Disagree" or "Strongly Disagree" to any of the above, please let us know why (in detail):

What changes would you recommend making to this OJT course more effective?

## Unsatisfactory OJT Evaluation with Remediation Steps

Task or Question #	Reason for failure	Remediation steps

Course Title: Operation of Ludlum 2929, 3030, and 3030E Sample Counters	OJT #: 46711
Trainee Name (print):	Z #:
Signature:	Date:
Evaluator Name (print):	Z #:
Signature:	Date:

1. **THE TRAINEE MAY NOT PERFORM THE *OJT TRAINEE GUIDE* TASKS IN HIS/HER JOB UNTIL PASSING THE EVALUATION FOR THOSE TASKS.** The only exception is if he/she is supervised directly by a person qualified for those tasks.
2. The evaluator must provide remediation according to the above "Remediation Steps." When ready, the trainee must be evaluated a second time. This process continues until the trainee passes the evaluation.
3. Submit this form to the appropriate training coordinator or training administrator to file the original in the trainee's training records.



**Organization Name**  
RP-PROG

**OJT Course Title**  
RCT: Thermo RadEye SX with Portable Detectors

**Course Number**  
46713

**Revision Number**  
4.0

Developer	<u>Timothy Vance</u> <i>Developer</i>	<u>TIMOTHY VANCE (Affiliate)</u> <small>Digitally signed by TIMOTHY VANCE (Affiliate) Date: 2022.04.22 11:41:05 -06'00'</small>	<u>Signature</u>	<u>Date</u>
Subject Matter Review	<u>Justin Gillilan</u> <i>Subject Matter Expert</i>	<u>Justin Gillilan</u> <small>Digitally signed by Justin Gillilan Date: 2022.04.22 11:53:27 -06'00'</small>	<u>Signature</u>	<u>Date</u>
Approval	<u>Keith Luna</u> <i>RP Programs Team Leader</i>	<u>KEITH LUNA (Affiliate)</u> <small>Digitally signed by KEITH LUNA (Affiliate) Date: 2022.05.03 08:48:45 -06'00'</small>	<u>Signature</u>	<u>Date</u>

**This document does not contain scientific or technical information  
DUSA Designator: RADPRO**

#### NOTE

This document contains instructions for all three OJT training roles: Instructor, Trainee, and Evaluator.

Section 1, **OJT Instructor Guide**, provides information for developing and teaching OJT.

Section 2, **OJT Trainee Guide**, contains everything a trainee needs to prepare for training and evaluation.

Section 3, **OJT Evaluator Guide**, provides rules and guidelines to evaluate a trainee properly.

Section 4, **Trainee Evaluation of OJT Instruction and Evaluation**.

Section 5, **Unsatisfactory OJT Evaluation with Remediation Steps**.

#### Revision Log

Rev. No.	Date	Description of Change
1.0	5/28/2020	Initial release
2.0	7/21/2021	Updated with RP-PROG-TP-400 T1 R1 to include Ludlum 44-3 instructions.
3.0	11/29/2021	Revised OJT performance tasks associated with 44-3 instructions.
4.0	4/22/2022	Revised OJT templates to improve LP information and updated procedural revisions

## Section 1: OJT Instructor Guide

This *OJT Instructor Guide* provides all the information you need in order to understand the following:

- OJT Instructor and Evaluator Qualifications
- OJT Instruction Checklist
- OJT Lesson Plan

### OJT Instructor and Evaluator Qualifications

1. OJT instructors and evaluators must meet the following criteria:
  - Completed TSQP: OJT Instructor/Evaluator training requirements (Curriculum 411: TSQP—OJT Instructor/Evaluator)
2. SMEs cannot develop OJT instructional material unless they meet one of the two requirements below:
  - They have completed the appropriate instructional TSQP development courses (Curriculum: 409—TSQP Training Specialist [nonnuclear facility] or 10484: TSQP—Training Specialist [nuclear facility]) or
  - A qualified training specialist, training manager, or organizational representative reviews and approves the lesson plan.
3. An OJT instructor/evaluator is limited to training/evaluating no more than three trainees at a time. To exceed the limit for the trainee-to-instructor ratio, the responsible line manager, or designee, with advice from the instructor and operations workers, approves an appropriate ratio and documents the ratio in the *OJT Lesson Plan* or in a separate memorandum for special circumstances.

**Note:** *Candidates for certification in nuclear facilities must receive one-on-one OJT instruction with the exception of a student to instructor ratio of up to a 12 to 1 as set forth in RP memorandum RP-18-028.*

### OJT Lesson Plan

The lesson plan itself is divided into three training sections: introduction, body, and conclusion. Ensure that you cover all material in the order indicated and remember to review and apply the training techniques that you learned during your TSQP instruction. During training, you can say the italicized wording *verbatim* or use similar wording that is more natural to you. In addition, remember to provide information for items that are **[bold and inside brackets]**.

#### *Introduction*

- Brief Building Emergency Plan
- Provide an overview for the OJT instruction and evaluation process – **Prepare** (review of applicable procedures), **Practice** (Instructor guided practice and demonstrations), and **Present** (independent OJT evaluations)
- Ensure students have copies of the following materials:
  - a. RP-PROG-TP-400, Thermo RadEye SX with Portable Detectors,
  - b. RP-PROG FORM-111, Dual Scintillator Performance Check Log,
  - c. RP-PROG-FORM-109, Single-Scale Instrument Performance Check Log,
  - d. RP-1-FORM-041, Instrument Check Tag,

## Body

- **Procedure Review** – RP-PROG-TP-400, RP-1-FORM-111. Review with students and ensure the following topics are emphasized:
  - Discuss the precautions and limitations associated with the RadEye SX (RP-PROG-TP-400, section 2.0)
    - Battery life decreases significantly at lower temperatures
    - Each RadEye and detector are dedicated to each other. Cables may be changed out if same length
    - Instrument number on RadEye SX and detector must match
    - The RadEye SX background subtract feature is disabled
    - The RadEye SX w/ Ludlum 44-3 is used for qualitative surveys only
  - Operational characteristics of the RadEye SX w/ Ludlum 43-93 detector (RP-PROG-TP-400, section A 6.1)
    - Types of contamination detected – Alpha and Beta
    - Distance from surveying surface –  $\leq \frac{1}{4}$  inch
    - Detector movement speed – 1"/sec for free release, 2"/sec for non-free release
    - Type of detector – scintillation
  - Conducting a scanning survey with the RadEye SX w/ Ludlum 44-3 (RP-PROG-TP-400, section B 5.0,)
    - Types of radiation detected – Gamma (low energy)
    - Distance from surveying surface –  $\leq \frac{1}{4}$  inch
    - Detector movement speed – 1 foot/ 3 seconds
    - Type of detector – NaI(Tl) scintillation
  - Field maintenance (RP-PROG-TP-400, section 4.3.2)
    - Types of batteries in use – two AAA batteries (Duracell Procell alkaline batteries only)
  - Operation of the RadEye SX w/ Ludlum 43-93 detector (RP-PROG-TP-400, section A 6.2/7.0 - 7.2)
    - Section A 6.2, discuss and demonstrate a quantitative survey.
    - While performing, utilize the Decision Level charts and correction factor charts in section A 7.0-7.2
  - Operational checks of the RadEye SX with Portable Detectors (RP-PROG-TP-400, section. A 5.0/B 4.0)
    - Explain differences between performance tests and routine response checks
    - Establishing Reference Readings – When is this required?
    - Ludlum 44-3 detects radiation and has separate performance check requirements
- **OJT Task Demonstration**
  - a. Demonstrate all required performance steps utilizing LANL source jig, Am-241, Ci-36 sources and DU slug to perform all measurements for Reference Readings and Response Checks and complete RP-PROG-FORM-111 and RP-1-FORM-041.
  - b. Perform/Discuss AAA Battery Replacement

## Conclusion

- Review learning objectives with students
- Summarize key concepts and required steps for OJT evaluation
- Ask trainees to complete the attached *OJT Course Evaluation* (Section 4)
- Following the completion of OJT evaluation ensure copies are stored in the students electronic and physical personnel files.

## Section 2: OJT Trainee Guide

This *OJT Trainee Guide* provides all the information you need in order to understand the following:

- Prerequisites
- The OJT Instruction and Evaluation Process
- Related Documents (questions and performances are based on these)
- PPE, Equipment, and Training Aids
- Objectives (what you will know or be able to do)
- Safety and Knowledge Questions and Answers (including Safety Basis, TSR, and/or DSA questions, if applicable)
- Task Performance Steps

### Prerequisites

Prior to this training, you must have successfully completed, or be enrolled in, the following training requirements:

- Curriculum 116, *Radiological Control Technician Requirements*

If you have **not** met these prerequisites, notify your supervisor, training coordinator, or training administrator, and complete the prerequisites.

### The OJT Instruction and Evaluation Process

An instructor will provide you with an *OJT Trainee Guide* for each OJT lesson. Before starting your instruction, you must read the remainder of this *OJT Trainee Guide*. Write down any questions that you have and bring them to the OJT training session.

**During the instruction process, the suggestions below will help you succeed in learning the material:**

- Ask your instructor questions in order to understand what you need to learn. When in doubt, ask!
- Ask for coaching and repeated demonstrations at any time during your instruction.
- Bring your *OJT Trainee Guide* to training sessions and refer to performance steps, safety and knowledge questions, and other related information as often as you like.
- Practice all performance activities for as long as you need to, until you feel comfortable doing the tasks.
- Ensure that you know and understand all the safety and knowledge questions in your *OJT Trainee Guide*. You will be asked these questions verbatim during your evaluation.

**During your evaluation, the following rules apply:**

- You may use your reference materials (such as procedures) during the evaluation, but you may **not** use your *OJT Trainee Guide*.
- The evaluator cannot answer any questions or coach you.
- Perform each task in accordance with the appropriate training/reference materials.
- In the event any problems arise beyond your knowledge and skills, step back and allow the evaluator to take control.
- Your performance criteria are as follows:
  - Failing to respond correctly to a safety-related question (including Safety Basis, Technical Safety Requirement [TSR], and/or Documented Safety Analysis [DSA] questions, if applicable) is an automatic failure of this evaluation. Safety questions require 100% accuracy.

- You must successfully respond to all knowledge questions 80% or better.
- Incorrectly **performing** any **critical step** or two (2) non-critical steps constitutes a failure of this evaluation.
- A **critical step** in a performance demonstration is defined as a step that, if incorrectly performed or performed in the wrong order, may cause the following: personnel injury or a safety issue; equipment damage or cause a TSR and/or; significant recovery time.
- The OJT evaluator **must** record any error serious enough to warrant discontinuing the training session or a failure of a task/subtask evaluation.

### Related Documents

RELATED DOCUMENTS
<p>The documents below provide the basis for all knowledge and safety questions, as well as performance of tasks.</p> <ul style="list-style-type: none"><li>• <b>RP-PROG-TP-400, Thermo RadEye SX with Portable Detectors</b></li><li>• <b>RP-PROG-FORM-111, Dual Scintillator Performance Check Log</b></li><li>• <b>RP-PROG-FORM-109, Single-Scale Instrument Performance Check Log</b></li><li>• <b>RP-PROG-FORM-041, Instrument Check Tag</b></li></ul>

### Objectives

OBJECTIVES
<p>Terminal Objectives:</p> <p>TO1: Given the need to operate the RadEye SX with Portable Detectors, perform all the required checks to place the instrument in service accordance with RP-PROG-TP-400, <i>Thermo RadEye SX with Portable Detectors</i></p>
<p>Enabling Objectives:</p> <p>EO1: Recognize the limitations associated with the RadEye SX</p> <p>EO2: Perform the operational checks for the RadEye SX with a Ludlum 43-93 detector</p> <p>EO3: Establish reference readings for the RadEye SX with a Ludlum 43-93 detector</p> <p>EO4: Initiate the instrument check tag for the RadEye SX with a Ludlum 43-93 detector</p> <p>EO5: Determine the Decision Levels of a RadEye SX with a Ludlum 43-93 detector from an obtained background count</p> <p>EO6: State the circumstances in which a routine response check is required for the RadEye SX with a Ludlum 43-93 detector</p> <p>EO7: State the circumstances in which a performance check is required for the RadEye SX with a Ludlum 43-93 detector</p> <p>EO8: Discuss how to conduct a scanning survey using the RadEye SX with a Ludlum 44-3 detector</p>

*Note: In order to complete this form, the OJT evaluator must initial in the Sat. or Unsat. columns as appropriate.*

### Task Performance Steps

#### P1: Perform Operational (functional), Reference, and Response Checks for the RadEye SX.

**EVALUATOR:** Ask the Trainee to perform or discuss the following steps:

Performance Step	Sat.	Unsat.
<b>P1.1: Perform operational checks (functional checks) for the RadEye SX with a Ludlum 43-93 detector. (RP-PROG-TP-400)</b>  Acceptable performance: <ul style="list-style-type: none"> <li>Section A 5.0, steps 1-3</li> </ul>		
<b>P1.2: Establish Acceptance Criteria (Reference Readings) for the RadEye SX with a Ludlum 43-93 detector. (RP- PROG-TP-400)</b>  Acceptable performance: <ul style="list-style-type: none"> <li>Section A 2.2, steps 1-12</li> <li>Section A 2.3, steps 1-8</li> <li>Fill in applicable blocks of RP-PROG-FORM-111</li> </ul> <b>Safety: Gloves must be worn when handling radioactive sources</b>		(S)
<b>P1.3: Initiate an Instrument Check Tag for the RadEye SX with a Ludlum 43-93 detector. (RP- PROG-TP-400)</b>  Acceptable performance: <ul style="list-style-type: none"> <li>Section A 2.3, steps 9-13</li> <li>Fill out applicable information on RP-PROG-FORM-041</li> </ul> <b>Safety: Gloves must be worn when handling radioactive sources</b>		(S)
<b>P1.4: Determine the Decision Levels (DL) of the RadEye SX with a Ludlum 43-93 by obtaining a background count. (RP- PROG-TP-400)</b>  Acceptable performance: <ul style="list-style-type: none"> <li>Section A 6.2, steps 1-5</li> </ul>		
<b>K1.1: What are the limitations associated with the RadEye SX? (RP-PROG-TP-400, section 2.2)</b>  Acceptable response: <ul style="list-style-type: none"> <li>Each RadEye SX and detector are dedicated to each other. Cables of same length may be changed out.</li> <li>Instrument numbers on the RadEye SX and detector calibration stickers must match</li> <li>The RadEye SX with Ludlum 44-3 detector is only used for qualitative surveys</li> </ul>		

Performance Step	Sat.	Unsat.
<b>K1.2: When is a performance check required for the RadEye SX with a Ludlum 43-93 detector?</b> (RP-PROG-TP-400, section A 3.1, step 1)  Acceptable response: <ul style="list-style-type: none"> <li>At any time when the proper response of the instrument is in question</li> <li>After a failed response check</li> <li>After a severe physical shock to the instrument (e.g., dropped)</li> </ul>		
<b>K1.3: When is a routine response check required for the RadEye SX with a Ludlum 43-93 detector?</b> (RP-PROG-TP-400, section A 4.1, step 1)  Acceptable response: <ul style="list-style-type: none"> <li>Prior to the first use of the day or shift</li> <li>After replacing batteries</li> <li>After changing a cable</li> </ul>		
<b>K1.4: How is a scanning survey conducted using the RadEye SX with a Ludlum 44-3 detector?</b> (RP-PROG-TP-400, section B 5.0)  Acceptable response <ul style="list-style-type: none"> <li>Distance <math>\leq 1/4</math> "</li> <li>Speed of 1 foot/sec</li> <li>Response time of ten seconds</li> <li>Investigation trigger is any elevated clicking</li> </ul>		

When the trainee completes the **instructional** portion of this on-the-job training, both the instructor and the trainee must sign at the same time and date. When the trainee completes all **evaluation**, both the evaluator and the trainee must sign at the same time and date. (If more than one instructor or evaluator is involved, add names and signatures.)

Trainee Name (print):	Z#:
Trainee Post-Instruction Signature:	Date:
Trainee Post-Evaluation Signature:	Date:
Instructor Name (print):	Z#:
Instructor Signature:	Date:
Evaluator Name (print):	Z#:
Evaluator Signature:	Date:

## Section 3: OJT Evaluator Guide

This *OJT Evaluator Guide* provides all the information you need in order to understand the following:

- Instructions to the OJT Evaluator
- Evaluation criteria
- *Unsatisfactory OJT Evaluation with Remediation Steps* form (section 5)

### Instructions to the OJT Evaluator

#### CAUTION

**DO NOT ALLOW TRAINEE TO MAKE AN ERROR THAT WOULD PUT PERSONNEL, EQUIPMENT, THE ENVIRONMENT, OR THE FACILITY IN JEOPARDY AT ANY TIME DURING THIS EVALUATION.**

- ☐ Review evaluation rules with the trainee and ask if there are any questions before beginning the evaluation.
- ☐ During the evaluation, do not allow the worker to ask questions; do not coach the worker in any way. The worker may consult reference materials (**except** the *OJT Trainee Guide*) at any time during the performance evaluation but may not ask you to clarify on any task or item.

#### NOTE

The evaluator may require the trainee to talk through a performance step before performing it. The evaluator must take care not to agree or disagree with the trainee's statements; this would be coaching. However, an exact repeat-back is not coaching.

In cases where evaluation will involve the use of radioactive sources, utilize the following methods in the priority listed below.

1. Use actual sources.
2. Use Teletrix or other instrument simulators.
3. Supply the trainee with simulated source values.

- During the performance evaluation, ask safety and knowledge questions **verbatim**, including Safety Basis, TSR, and DSA questions, if applicable. Evaluate only knowledge and safety questions, as well as performance steps, that are included in the *OJT Trainee Guide*.
- As a trainee responds/performs acceptably to a question or performance task, write your initials in the "Sat." column. When every item is a "Sat.", submit the completed copy to your training coordinator or training administrator.
- If a trainee fails to answer safety/knowledge questions, or performs tasks/subtasks improperly, write your initials in the "Unsat." column. For all failures, you must complete the *Unsatisfactory OJT Evaluation with Remediation Steps* form (section 5) and submit it to the instructor as well as to your training coordinator or training administrator for recordkeeping purposes.

### Evaluation Criteria

Evaluate the trainee using the criteria below.

- If a trainee responds incorrectly to a safety-related question it is an automatic failure of this evaluation. Safety questions require 100% accuracy (including Safety Basis, TSR, and/or DSA questions, if applicable).
- The trainee must successfully respond to all knowledge questions with 80% or better accuracy.
- Incorrectly **performing** one (1) critical step or two (2) non-critical steps constitutes a failure of this evaluation.
- A **critical step** in a performance demonstration is defined as a step that, if incorrectly performed or performed in the wrong order, may cause the following: personnel injury or a safety issue; equipment damage or cause a Technical Safety Requirement/Review (TSR), and/or; significant recovery time.

**After completion of the OJT; The Evaluator shall complete the following for credit and record retention:**

- 1) Make a copy of the original record and retain at the facility. All OJT records will transfer with the RCT.
- 2) Email a scanned copy of the OJT to [RCT-OJT@lanl.gov](mailto:RCT-OJT@lanl.gov)
  - a. [The email must contain a complete copy of Sections 2 and 4 for credit.](#)
  - b. A copy of section 5 must also be included in cases where remediation is required.

Send the ORIGINAL record to the RP-PROG Group Admin office, MS K788.

Please take the time to complete the following course evaluation after you have completed the OJT performance evaluation. Your feedback is important to assist us with the effectiveness of this course.

<b>OJT #46713</b>	<b>Title: Thermo RadEye SX with Portable Detectors</b>
<b>Date:</b>	Instructor:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. This OJT was a good use of my time.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. This OJT will enable me to perform this task safely and correctly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. The learning objectives found in this OJT were appropriate to the task being trained.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. The performance evaluation portion of this OJT was effective at measuring how much I learned during the instructional portion of the OJT.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Rate your level of knowledge:	Low				High
Before the OJT instruction and evaluation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
After the OJT instruction and evaluation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If you marked “Disagree” or “Strongly Disagree” to any of the above, please let us know why (in detail):

---

What changes would you recommend making to this OJT course more effective?

## Unsatisfactory OJT Evaluation with Remediation Steps

Task or Question #	Reason for failure	Remediation steps

Course Title: <b>Thermo RadEye SX with Portable Detectors</b>	OJT #: <b>46713</b>
Trainee Name (print):	Z #:
Signature:	Date:
Evaluator Name (print):	Z #:
Signature:	Date:

1. **THE TRAINEE MAY NOT PERFORM THE OJT TRAINEE GUIDE TASKS IN HIS/HER JOB UNTIL PASSING THE EVALUATION FOR THOSE TASKS.** The only exception is if he/she is supervised directly by a person qualified for those tasks.
2. The evaluator must provide remediation according to the above "Remediation Steps." When ready, the trainee must be evaluated a second time. This process continues until the trainee passes the evaluation.
3. Submit this form to the appropriate training coordinator or training administrator to file the original in the trainee's training records.

**Organization Name**

RP-PROG

**OJT Course Title**

RCT: Operation of Portable Tritium Air Monitors

**Course Number**

51932

**Revision Number**

2.0

Developer

Timothy Vance

*Developer*TIMOTHY VANCE  
(Affiliate)Digitally signed by TIMOTHY  
VANCE (Affiliate)  
Date: 2022.05.02 09:39:01 -06'00'*Signature**Date*Subject Matter  
Review

Justin Gillilan

*Subject Matter Expert*

Justin Gillilan

Digitally signed by Justin  
Gillilan  
Date: 2022.05.02 15:36:53  
-06'00'*Signature**Date*

Approval

Keith Luna

*RP Programs Team Leader*KEITH LUNA  
(Affiliate)Digitally signed by KEITH  
LUNA (Affiliate)  
Date: 2022.05.02 15:38:41  
-06'00'*Signature**Date*

**This document does not contain scientific or technical information  
DUSA Designator: RADPRO**

**NOTE**

This document contains instructions for all three OJT training roles: Instructor, Trainee, and Evaluator.

Section 1, **OJT Instructor Guide**, provides information for developing and teaching OJT.

Section 2, **OJT Trainee Guide**, contains everything a trainee needs to prepare for training and evaluation.

Section 3, **OJT Evaluator Guide**, provides rules and guidelines to evaluate a trainee properly.

Section 4, **Trainee Evaluation of OJT Instruction and Evaluation**.

Section 5, **Unsatisfactory OJT Evaluation with Remediation Steps**.

**Revision Log**

Rev. No.	Date	Description of Change
1.0	5/4/2021	Initial release
2.0	4/25/2022	Revised OJT templates to improve LP information and updated procedural revisions

## Section 1: OJT Instructor Guide

This *OJT Instructor Guide* provides all the information you need in order to understand the following:

- OJT Instructor and Evaluator Qualifications
- OJT Instruction Checklist
- OJT Lesson Plan

### OJT Instructor and Evaluator Qualifications

1. OJT instructors and evaluators must meet the following criteria:
  - Completed TSQP: OJT Instructor/Evaluator training requirements (Curriculum 411: TSQP—OJT Instructor/Evaluator)
2. SMEs cannot develop OJT instructional material unless they meet one of the two requirements below:
  - They have completed the appropriate instructional TSQP development courses (Curriculum: 409—TSQP Training Specialist [nonnuclear facility] or 10484: TSQP—Training Specialist [nuclear facility]) or
  - A qualified training specialist, training manager, or organizational representative reviews and approves the lesson plan.
3. An OJT instructor/evaluator is limited to training/evaluating no more than three trainees at a time. To exceed the limit for the trainee-to-instructor ratio, the responsible line manager, or designee, with advice from the instructor and operations workers, approves an appropriate ratio and documents the ratio in the *OJT Lesson Plan* or in a separate memorandum for special circumstances.

**Note:** *Candidates for certification in nuclear facilities must receive one-on-one OJT instruction with the exception of a student to instructor ratio of up to a 12 to 1 as set forth in RP memorandum RP-18-028.*

### OJT Lesson Plan

The lesson plan itself is divided into three training sections: introduction, body, and conclusion. Ensure that you cover all material in the order indicated, and remember to review and apply the training techniques that you learned during your TSQP instruction. During training, you can say the italicized wording *verbatim* or use similar wording that is more natural to you. In addition, remember to provide information for items that are **[bold and inside brackets]**.

### Introduction

- Brief Building Emergency Plan
- Provide an overview for the OJT instruction and evaluation process – **Prepare** (review of applicable procedures), **Practice** (Instructor guided practice and demonstrations), and **Present** (independent OJT evaluations)
- Ensure students have copies of the following materials:
  - a. RP-1-DP-57, Operating the Femto-Tech PTM-1812 Tritium Monitor
  - b. RP-SOP-060, Overhoff 394C Tritium Air Monitors
  - c. RP-1-DP-29, Operational Checks of Tritium Air Monitors
  - d. RP-1-FORM-42, Tritium Air Monitor Performance Test Log
  - e. RP-PROG-FORM-041, Instrument Check Tag

## Body

- **Procedure Review** – RP-1-DP-57, RP-SOP-060, and RP-1-FORM-42. Review with students and ensure the following topics are emphasized:
  - a. Operational Characteristics of the Overhoff 394C Tritium Air Monitor (RP-SOP-060, pg. 4)
    - 1.0 Introduction
    - 2.0 Precautions and Limitations
  - b. Operational Characteristics of the Femto-Tech PTM-1812 Tritium Monitor (RP-1-DP-57, pg. 1)
    - Types of radiation detected – Beta, with background from alpha, beta, and gamma
    - Range of detector – 0-20,000  $\mu\text{Ci}/\text{m}^3$  with one linear range
    - Type of detector – Air Ionization Chamber
    - Lower detection limit – approx. 5  $\mu\text{Ci}/\text{m}^3$
  - c. Field Maintenance of the Overhoff 394C Tritium Air Monitor (RP-SOP-060, section 6.1)
  - d. Field Maintenance of the Femto-Tech PTM-1812 Tritium Monitor (RP-1-DP-57, pg. 4)
  - e. Operational Checks of the Overhoff 394C Tritium Air Monitor (RP-SOP-060, section 4.0, RP-1-DP-29, section 4.1, step 1-3)
  - f. Operational Checks of the Femto-Tech PTM-1812 Tritium Air Monitor (RP-1-DP-57, pg. 2)
  - g. Operations of the Overhoff 394C Tritium Air Monitor (RP-SOP-060, section 5.1, 5.2)
  - h. **OJT Task Demonstration**
    - Demonstrate all required performance steps
    - Quiz students on knowledge questions
    - **INSTRUCTOR: Demonstrate Battery Change**
    - Utilize a Cs-137 Calibrator, equivalent source, or simulated source to perform all measurements for Reference Readings and Response Checks and complete RP-1-FORM-42 (**SAFETY: Anti-contamination gloves must be worn when handling radioactive sources**)

## Conclusion

- Review learning objectives with students
- Summarize key concepts and required steps for OJT evaluation
- **Ask trainees to complete the attached OJT Course Evaluation (Section 4).**
- Following the completion of OJT evaluation ensure copies are stored in the student's electronic and physical personnel files

## Section 2: OJT Trainee Guide

This *OJT Trainee Guide* provides all the information you need in order to understand the following:

- Prerequisites
- The OJT Instruction and Evaluation Process
- Related Documents (questions and performances are based on these)
- PPE, Equipment, and Training Aids
- Objectives (what you will know or be able to do)
- Safety and Knowledge Questions and Answers (including Safety Basis, TSR, and/or DSA questions, if applicable)
- Task Performance Steps

### Prerequisites

Prior to this training, you must have successfully completed, or be enrolled in, the following training requirements:

- Curriculum 116, *Radiological Control Technician Requirements*

If you have **not** met these prerequisites, notify your supervisor, training coordinator, or training administrator, and complete the prerequisites.

### The OJT Instruction and Evaluation Process

An instructor will provide you with an *OJT Trainee Guide* for each OJT lesson. Before starting your instruction, you must read the remainder of this *OJT Trainee Guide*. Write down any questions that you have and bring them to the OJT training session.

During the instruction process, the suggestions below will help you succeed in learning the material:

- Ask your instructor questions in order to understand what you need to learn. When in doubt, ask!
- Ask for coaching and repeated demonstrations at any time during your instruction.
- Bring your *OJT Trainee Guide* to training sessions and refer to performance steps, safety and knowledge questions, and other related information as often as you like.
- Practice all performance activities for as long as you need to, until you feel comfortable doing the tasks.
- Ensure that you know and understand all the safety and knowledge questions in your *OJT Trainee Guide*. You will be asked these questions verbatim during your evaluation.

During your evaluation, the following rules apply:

- You may use your reference materials (such as procedures) during the evaluation, but you may **not** use your *OJT Trainee Guide*.
- The evaluator cannot answer any questions or coach you.
- Perform each task in accordance with the appropriate training/reference materials.
- In the event any problems arise beyond your knowledge and skills, step back and allow the evaluator to take control.
- Your performance criteria are as follows:
  - Failing to respond correctly to a safety-related question (including Safety Basis, Technical Safety Requirement [TSR], and/or Documented Safety Analysis [DSA] questions, if applicable) is an automatic failure of this evaluation. Safety questions require 100% accuracy.

- You must successfully respond to all knowledge questions 80% or better.
- Incorrectly **performing** any **critical step** or two (2) non-critical steps constitutes a failure of this evaluation.
- A **critical step** in a performance demonstration is defined as a step that, if incorrectly performed or performed in the wrong order, may cause the following: personnel injury or a safety issue; equipment damage or cause a TSR and/or; significant recovery time.
- The OJT evaluator **must** record any error serious enough to warrant discontinuing the training session or a failure of a task/subtask evaluation.

### Related Documents

RELATED DOCUMENTS
<p>The documents below provide the basis for all knowledge and safety questions, as well as performance of tasks.</p> <ul style="list-style-type: none"><li>• <b>RP-1-DP-57, Operating the Femto-Tech PTM-1812 Tritium Monitor</b></li><li>• <b>RP-SOP-060, Overhoff 394C Tritium Air Monitor</b></li><li>• <b>RP-1-DP-29, Operational Checks of Tritium Air Monitors</b></li><li>• <b>RP-1-FORM-42, Tritium Air Monitor Performance Test Log</b></li><li>• <b>RP-PROG-FORM-041, Instrument Check Tag</b></li></ul>

### Objectives

OBJECTIVES
<p>Terminal Objectives:</p> <p>TO1: Given the need to operate tritium air monitors, perform all the required checks to place the instrument in service in accordance with RP-1-DP-29, <i>Operational Checks of Tritium Air Monitors</i>, RP-1-DP-57, <i>Operating the Femto-Tech PTM-1812 Tritium Monitor</i>, and RP-SOP-060, <i>Overhoff 394C Tritium Air Monitor</i></p>
<p>Enabling Objectives:</p> <p>EO1: Perform an operational (functional) check of a portable tritium air monitor</p> <p>EO2: Establish reference readings for a portable tritium air monitor</p> <p>EO3: Initiate an Instrument Check Tag for a tritium air monitor</p> <p>EO4: Perform a tritium water vapor and gas sample using a portable tritium air monitor</p> <p>EO5: Perform a particulate special tritium compounds sample using a portable tritium air monitor</p> <p>EO6: Demonstrate knowledge of the times a performance test is required for the tritium air monitors</p>

*Note: In order to complete this form, the OJT evaluator must initial in the Sat. or Unsat. columns as appropriate.*

### Task Performance Steps

**P1: Perform Operational (functional), Reference, and Response Checks of a Tritium Air Monitors.**

**EVALUATOR:** Ask the Trainee to "Perform an initial setup of a Tritium Air Monitor."

Performance Step	Sat.	Unsat.
<b>P1.1: Perform operational checks (functional checks) of a tritium air monitor (RP-1-DP-29)</b> Acceptable performance: <ul style="list-style-type: none"> <li>RP-1-DP-29, 4.1, steps: 1-3</li> </ul>		
<b>P1.2: Establish reference readings for a tritium air monitor (RP-1-DP-29)</b> Acceptable performance: <ul style="list-style-type: none"> <li>Section 4.2, steps: 1-11, as applicable</li> <li>Properly fills out all applicable blocks on RP-1-FORM-42</li> </ul> <b>Safety: Gloves must be worn when handling sources</b>		(S)
<b>P1.3: Initiate an Instrument Check Tag for a tritium air monitor (RP-1-DP-29)</b> Acceptable Response: <ul style="list-style-type: none"> <li>Section 4.4, steps: 1-2, as applicable</li> <li>Section 4.5, step: 1, as applicable</li> <li>Properly fills out all applicable information on RP-PROG-FORM-041</li> </ul> <b>Safety: Gloves must be worn when handling sources</b>		(S)
<b>K1.1: When is a performance test required for the tritium air monitors (RP-1-DP-29, section 4.6)</b> Acceptable Response: <ul style="list-style-type: none"> <li>After changing batteries</li> <li>If the instrument fails a response check</li> <li>Any time the proper response of the instrument is in question</li> <li>As stated in the facility specific RMIs</li> </ul>		

Performance Step	Sat.	Unsat.
<b>P1.4: Perform a tritium water vapor and gas sample using a tritium air monitor</b> (Simulate count time and tritium readings as necessary) (RP-1-DP-57, pg.3) or (RP-SOP-060, section 5.1) Acceptable Response (RP-1-DP-57): <ul style="list-style-type: none"> <li>pg. 3, steps 1-5 as applicable</li> </ul> <b>or</b> Acceptable Response (RP-SOP-060): <ul style="list-style-type: none"> <li>Section 5.1, steps 1-6 as applicable</li> </ul>		
<b>P1.5: Perform a particulate special tritium compounds sample using a tritium air monitor</b> (Simulate count time and tritium readings as necessary) (RP-1-DP-57, pg.3) or (RP-SOP-060, section 5.12) Acceptable Response (RP-1-DP-57): <ul style="list-style-type: none"> <li>pg. 3, steps 1-6, as applicable</li> </ul> <b>or</b> Acceptable Response (RP-SOP-060): <ul style="list-style-type: none"> <li>Section 5.2, steps 1-9, as applicable</li> </ul>		

When the trainee completes the **instructional** portion of this on-the-job training, both the instructor and the trainee must sign at the same time and date. When the trainee completes all **evaluation**, both the evaluator and the trainee must sign at the same time and date. (If more than one instructor or evaluator is involved, add names and signatures.)

Trainee Name (print):	Z#:
Trainee Post-Instruction Signature:	Date:
Trainee Post-Evaluation Signature:	Date:
Instructor Name (print):	Z#:
Instructor Signature:	Date:
Evaluator Name (print):	Z#:
Evaluator Signature:	Date:

## Section 3: OJT Evaluator Guide

This *OJT Evaluator Guide* provides all the information you need in order to understand the following:

- Instructions to the OJT Evaluator
- Evaluation criteria
- *Unsatisfactory OJT Evaluation with Remediation Steps* form (section 5)

### Instructions to the OJT Evaluator

#### CAUTION

**DO NOT ALLOW TRAINEE TO MAKE AN ERROR THAT WOULD PUT PERSONNEL, EQUIPMENT, THE ENVIRONMENT, OR THE FACILITY IN JEOPARDY AT ANY TIME DURING THIS EVALUATION.**

- ☐ Review evaluation rules with the trainee, and ask if there are any questions before beginning the evaluation.
- ☐ During the evaluation, do not allow the worker to ask questions; do not coach the worker in any way. The worker may consult reference materials (**except** the *OJT Trainee Guide*) at any time during the performance evaluation but may not ask you to clarify on any task or item.

#### NOTE

The evaluator may require the trainee to talk through a performance step before performing it. The evaluator must take care not to agree or disagree with the trainee's statements; this would be coaching. However, an exact repeat-back is not coaching.

In cases where evaluation will involve the use of radioactive sources, utilize the following methods in the priority listed below.

1. Use actual sources.
2. Use Teletrix or other instrument simulators.
3. Supply the trainee with simulated source values.

- During the performance evaluation, ask safety and knowledge questions **verbatim**, including Safety Basis, TSR, and DSA questions, if applicable. Evaluate only knowledge and safety questions, as well as performance steps, that are included in the *OJT Trainee Guide*.
- As a trainee responds/performs acceptably to a question or performance task, write your initials in the "Sat." column. When every item is a "Sat.", submit the completed copy to your training coordinator or training administrator.
- If a trainee fails to answer safety/knowledge questions, or performs tasks/subtasks improperly, write your initials in the "Unsat." column. For all failures, you must complete the *Unsatisfactory OJT Evaluation with Remediation Steps* form (section 5) and submit it to the instructor as well as to your training coordinator or training administrator for recordkeeping purposes.

### Evaluation Criteria

Evaluate the trainee using the criteria below.

- If a trainee responds incorrectly to a safety-related question it is an automatic failure of this evaluation. Safety questions require 100% accuracy (including Safety Basis, TSR, and/or DSA questions, if applicable).
- The trainee must successfully respond to all knowledge questions with 80% or better accuracy.
- Incorrectly **performing** one (1) critical step or two (2) non-critical steps constitutes a failure of this evaluation.
- A **critical step** in a performance demonstration is defined as a step that, if incorrectly performed or performed in the wrong order, may cause the following: personnel injury or a safety issue; equipment damage or cause a Technical Safety Requirement/Review (TSR), and/or; significant recovery time.

**After completion of the OJT; The Evaluator shall complete the following for credit and record retention:**

- 1) Make a copy of the original record and retain at the facility. All OJT records will transfer with the RCT.
- 2) Email a scanned copy of the OJT to [RCT-OJT@lanl.gov](mailto:RCT-OJT@lanl.gov)
  - a. [The email must contain a complete copy of Sections 2 and 4 for credit.](#)
  - b. A copy of section 5 must also be included in cases where remediation is required.

Send the ORIGINAL record to the RP-PROG Group Admin office, MS K788.

## Trainee Evaluation of OJT Instruction and Evaluation

Please take the time to complete the following course evaluation after you have completed the OJT performance evaluation. Your feedback is important to assist us with the effectiveness of this course.

OJT #51932	Title: Operation of Portable Tritium Air Monitors
Date:	Instructor:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. This OJT was a good use of my time.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. This OJT will enable me to perform this task safely and correctly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. The learning objectives found in this OJT were appropriate to the task being trained.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. The performance evaluation portion of this OJT was effective at measuring how much I learned during the instructional portion of the OJT.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Rate your level of knowledge:	Low				High
Before the OJT instruction and evaluation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
After the OJT instruction and evaluation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If you marked "Disagree" or "Strongly Disagree" to any of the above, please let us know why (in detail):

What changes would you recommend making to this OJT course more effective?

## Unsatisfactory OJT Evaluation with Remediation Steps

Task or Question #	Reason for failure	Remediation steps

Course Title: Operation of Portable Tritium Air Monitors	OJT #: 51932
Trainee Name (print):	Z #:
Signature:	Date:
Evaluator Name (print):	Z #:
Signature:	Date:

1. **THE TRAINEE MAY NOT PERFORM THE *OJT TRAINEE GUIDE* TASKS IN HIS/HER JOB UNTIL PASSING THE EVALUATION FOR THOSE TASKS.** The only exception is if he/she is supervised directly by a person qualified for those tasks.
2. The evaluator must provide remediation according to the above "Remediation Steps." When ready, the trainee must be evaluated a second time. This process continues until the trainee passes the evaluation.
3. Submit this form to the appropriate training coordinator or training administrator to file the original in the trainee's training records.



**Organization Name**  
RP-PROG

**OJT Course Title**  
RCT: Operation of the Eberline/Thermo E-600 with SHP-380A/AB or GM Pancake Detectors

**Course Number**  
52275

**Revision Number**  
2.0

Developer	Timothy Vance <i>Developer</i>	TIMOTHY VANCE (Affiliate) <small>Digitally signed by TIMOTHY VANCE (Affiliate) Date: 2022.04.25 15:59:13 -06'00'</small>	<i>Signature</i>	<i>Date</i>
Subject Matter Review	Justin Gillilan <i>Subject Matter Expert</i>	Justin Gillilan <small>Digitally signed by Justin Gillilan Date: 2022.04.25 16:02:32 -06'00'</small>	<i>Signature</i>	<i>Date</i>
Approval	Keith Luna <i>RP Programs Team Leader</i>	KEITH LUNA (Affiliate) <small>Digitally signed by KEITH LUNA (Affiliate) Date: 2022.04.29 10:10:23 -06'00'</small>	<i>Signature</i>	<i>Date</i>

**This document does not contain scientific or technical information  
DUSA Designator: RADPRO**

#### NOTE

This document contains instructions for all three OJT training roles: Instructor, Trainee, and Evaluator.

Section 1, ***OJT Instructor Guide***, provides information for developing and teaching OJT.

Section 2, ***OJT Trainee Guide***, contains everything a trainee needs to prepare for training and evaluation.

Section 3, ***OJT Evaluator Guide***, provides rules and guidelines to evaluate a trainee properly.

Section 4, ***Trainee Evaluation of OJT Instruction and Evaluation***.

Section 5, ***Unsatisfactory OJT Evaluation with Remediation Steps***.

#### Revision Log

Rev. No.	Date	Description of Change
0.0	5/04/2021	Initial release
1.0	9/16/2021	General overhaul of terms used throughout OJT as well as OJT evaluation
2.0	4/20/2022	Revised OJT templates to improve LP information and updated procedural revisions

## Section 1: OJT Instructor Guide

This *OJT Instructor Guide* provides all the information you need in order to understand the following:

- OJT Instructor and Evaluator Qualifications
- OJT Instruction Checklist
- OJT Lesson Plan

### OJT Instructor and Evaluator Qualifications

1. OJT instructors and evaluators must meet the following criteria:
  - Completed TSQP: OJT Instructor/Evaluator training requirements (Curriculum 411: TSQP—OJT Instructor/Evaluator)
2. SMEs cannot develop OJT instructional material unless they meet one of the two requirements below:
  - They have completed the appropriate instructional TSQP development courses (Curriculum: 409—TSQP Training Specialist [nonnuclear facility] or 10484: TSQP—Training Specialist [nuclear facility]) or
  - A qualified training specialist, training manager, or organizational representative reviews and approves the lesson plan.
3. An OJT instructor/evaluator is limited to training/evaluating no more than three trainees at a time. To exceed the limit for the trainee-to-instructor ratio, the responsible line manager, or designee, with advice from the instructor and operations workers, approves an appropriate ratio and documents the ratio in the *OJT Lesson Plan* or in a separate memorandum for special circumstances.

**Note:** *Candidates for certification in nuclear facilities must receive one-on-one OJT instruction with the exception of a student to instructor ratio of up to a 12 to 1 as set forth in RP memorandum RP-18-028.*

### OJT Lesson Plan

The lesson plan itself is divided into three training sections: introduction, body, and conclusion. Ensure that you cover all material in the order indicated and remember to review and apply the training techniques that you learned during your TSQP instruction. During training, you can say the italicized wording *verbatim* or use similar wording that is more natural to you. In addition, remember to provide information for items that are **[bold and inside brackets]**.

### Introduction

- Brief Building Emergency Plan
- Provide an overview for the OJT instruction and evaluation process – **Prepare** (review of applicable procedures), **Practice** (Instructor guided practice and demonstrations), and **Present** (independent OJT evaluations)
- Ensure students have copies of the following materials:
  - a. RP-PROG-TP-403, Eberline/Thermo E-600 with SHP-380 A/AB or GM Pancake Detectors
  - b. RP-PROG-FORM-111, Dual Scintillator Performance Check Log
  - c. RP-PROG-FORM-109, Single-Scale Instrument Performance Check Log
  - d. RP-PROG-FORM-041, Instrument Check Tag

## **Body**

- **Procedure Review** – RP-PROG-TP-403, RP-1-FORM-111 Review with students and ensure the following topics are emphasized:
  1. Discuss the precautions and limitations associated with the E-600 with SHP-380 A/AB and GM Pancake Detectors (RP-PROG-TP-403, section 2.0)
  2. Operational characteristics of the E-600 with SHP-380 A/AB and GM Pancake Detectors (RP-PROG-TP-403, section A 6.1 and C 7.1)
  3. Field maintenance of the E-600 with SHP-380 A/AB and GM Pancake Detectors (RP-PROG-TP-403, section 4.3.1 and 4.3.2)
  4. Operating the E-600 with SHP-380 A/AB and GM Pancake Detectors (RP-PROG-TP-403, section 4.1)
  5. Operational checks of the E-600 with SHP-380 A/AB and GM Pancake Detectors (RP-PROG-TP-403, section A 2.0-4.1 and C 3.0-5.1)
    - Explain differences between performance tests and routine response checks
    - Establishing Reference Readings – When is it required
    - When are performance tests and routine response checks required?
- **OJT Task Demonstration**
  - Demonstrate all required performance steps
  - Utilize a LANL Sr-90 gold source box, source jig, Am-241, Ci-36 sources and DU slug or simulated sources to perform all measurements for Reference Readings and Response Checks and complete RP-PROG-FORM-109 and 111 and RP-1-FORM-041
  - SAFETY: Anti-contamination gloves must be worn when handling radioactive sources

## **Conclusion**

- Review learning objectives with students
- Summarize key concepts and required steps for OJT evaluation
- **Ask trainees to complete the attached OJT Course Evaluation (Section 4).**
- Following the completion of OJT evaluation ensure copies are stored in the student's electronic and physical personnel files

## Section 2: OJT Trainee Guide

This *OJT Trainee Guide* provides all the information you need in order to understand the following:

- Prerequisites
- The OJT Instruction and Evaluation Process
- Related Documents (questions and performances are based on these)
- PPE, Equipment, and Training Aids
- Objectives (what you will know or be able to do)
- Safety and Knowledge Questions and Answers (including Safety Basis, TSR, and/or DSA questions, if applicable)
- Task Performance Steps

### Prerequisites

Prior to this training, you must have successfully completed, or be enrolled in, the following training requirements:

- Curriculum 116, *Radiological Control Technician Requirements*

If you have **not** met these prerequisites, notify your supervisor, training coordinator, or training administrator, and complete the prerequisites.

### The OJT Instruction and Evaluation Process

An instructor will provide you with an *OJT Trainee Guide* for each OJT lesson. Before starting your instruction, you must read the remainder of this *OJT Trainee Guide*. Write down any questions that you have and bring them to the OJT training session.

During the instruction process, the suggestions below will help you succeed in learning the material:

- Ask your instructor questions in order to understand what you need to learn. When in doubt, ask!
- Ask for coaching and repeated demonstrations at any time during your instruction.
- Bring your *OJT Trainee Guide* to training sessions and refer to performance steps, safety and knowledge questions, and other related information as often as you like.
- Practice all performance activities for as long as you need to, until you feel comfortable doing the tasks.
- Ensure that you know and understand all the safety and knowledge questions in your *OJT Trainee Guide*. You will be asked these questions verbatim during your evaluation.

During your evaluation, the following rules apply:

- You may use your reference materials (such as procedures) during the evaluation, but you may **not** use your *OJT Trainee Guide*.
- The evaluator cannot answer any questions or coach you.
- Perform each task in accordance with the appropriate training/reference materials.
- In the event any problems arise beyond your knowledge and skills, step back and allow the evaluator to take control.
- Your performance criteria are as follows:
  - Failing to respond correctly to a safety-related question (including Safety Basis, Technical Safety Requirement [TSR], and/or Documented Safety Analysis [DSA] questions, if applicable) is an automatic failure of this evaluation. Safety questions require 100% accuracy.

- You must successfully respond to all knowledge questions 80% or better.
- Incorrectly **performing** any **critical step** or two (2) non-critical steps constitutes a failure of this evaluation.
- A **critical step** in a performance demonstration is defined as a step that, if incorrectly performed or performed in the wrong order, may cause the following: personnel injury or a safety issue; equipment damage or cause a TSR and/or; significant recovery time.
- The OJT evaluator **must** record any error serious enough to warrant discontinuing the training session or a failure of a task/subtask evaluation.

### Related Documents

RELATED DOCUMENTS
The documents below provide the basis for all knowledge and safety questions, as well as performance of tasks. <ul style="list-style-type: none"><li>• <b>RP-PROG-TP-403, Eberline/Thermo E-600 with SHP-380 A/AB or GM Pancake Detectors</b></li><li>• <b>RP-PROG-FORM-111, Dual Scintillator Performance Check Log</b></li><li>• <b>RP-PROG-FORM-109, Single Scale Performance Check Log</b></li><li>• <b>RP-PROG-FORM-041, Instrument Check Tag</b></li></ul>

### Objectives

OBJECTIVES
Terminal Objectives:  TO1: Given the need to operate the Eberline/Thermo E-600 with SHP-380 A/AB or GM Pancake Detectors, perform all the required checks to place the instrument in service accordance with <i>RP-PROG-TP-403, Eberline/Thermo E-600 with SHP-380 A/AB or GM Pancake Detectors</i>
Enabling Objectives:  EO1: Perform an operational (functional) check of the E-600 with SHP-380 A/AB or GM Pancake Detectors EO2: Establish reference readings for the E-600 with SHP-380 A/AB or GM Pancake Detectors EO3: Initiate an Instrument Check Tag for the E-600 with SHP-380 A/AB or GM Pancake Detectors EO4: State the circumstances in which a routine response check is required for the E-600 with SHP-380 A/AB or GM Pancake Detectors EO5: State the circumstances in which a performance check is required for the E-600 with SHP-380 A/AB or GM Pancake Detectors EO6: Determine the Decision Levels of the E-600 with SHP-380 A/AB or GM Pancake Detectors from an obtained background count

*Note: In order to complete this form, the OJT evaluator must initial in the Sat. or Unsat. columns as appropriate.*

### Task Performance Steps

#### P1: Perform Operational (functional) and Response Checks for the E-600 with SHP-380 A/AB or GM Pancake Detectors.

**EVALUATOR:** Ask the Trainee to “Perform an initial setup for the E-600 with SHP-380 A/AB or GM Pancake Detectors.”

Performance Step	Sat.	Unsat.
<b>P1.1: Perform operational checks (functional checks) for the E-600 with SHP-380 A/AB or GM Pancake Detector.</b> (RP-PROG-TP-403, section A 2.2, or C 4.2) Acceptable performance: <ul style="list-style-type: none"> <li>• Verify the instrument is in calibration</li> <li>• Check for physical/electrical defects that may interfere with normal operation, including cables and mylar window punctures</li> <li>• Verify adequate battery levels</li> <li>• Verify that no error messages as described in section 4.2, <i>Failure Indicators</i>, are present</li> </ul>		
<b>P1.2: Establish Acceptance Criteria (Reference Readings) for the E-600 with SHP-380 A/AB Detector or GM Pancake Detector.</b> (RP-PROG-TP-403) Acceptable performance using SHP-380 A/AB Detector: <ul style="list-style-type: none"> <li>• Section A 2.2, steps: 1-9</li> <li>• Properly fills out all applicable information on RP-PROG-FORM-111</li> </ul> Acceptable performance using GM Pancake Detector: <ul style="list-style-type: none"> <li>• Section C 3.2, steps: 1-9</li> <li>• Properly fills out all applicable information on RP-PROG-FORM-109</li> </ul> <b>Safety: Gloves must be worn when handling sources</b>		(S)
<b>P1.3: Initiate an Instrument Check Tag for the E-600 with SHP-380 A/AB Detector or GM Pancake Detector.</b> (RP-PROG-TP-403) Acceptable performance using SHP-380 A/AB Detector: <ul style="list-style-type: none"> <li>• Section A 2.3, steps 10-14</li> <li>• Properly fills out all applicable information on RP-PROG-FORM-041</li> </ul> Acceptable performance using GM Pancake Detector: <ul style="list-style-type: none"> <li>• Section C 3.3, steps 9-12</li> <li>• Properly fills out all applicable information on RP-PROG-FORM-041</li> </ul>		

Performance Step	Sat.	Unsat.
<b>K1.1: When is a performance check required for the E-600 with SHP-380 A/AB or GM Pancake Detectors.</b> (RP-PROG-TP-403, section A 3.1 or C 4.1) Acceptable response: <ul style="list-style-type: none"> <li>• After a failed response check</li> <li>• After a severe physical shock to the instrument (e.g., dropped)</li> <li>• At any time when the proper response of the instrument is in question</li> </ul>		
<b>P1.4: Determine the Decision Levels (DL) of the E-600 with SHP-380 A/AB or GM Pancake Detectors by obtaining a background count.</b> (RP- PROG-TP-403) Acceptable performance using SHP-380 A/AB Detector: <ul style="list-style-type: none"> <li>• Section A7.1 and A 7.2</li> </ul> Acceptable performance using GM Pancake Detector: <ul style="list-style-type: none"> <li>• Section C7.2</li> </ul>		
<b>K1.2: When is a response check required for the E-600 with SHP-380 A/AB or GM Pancake Detectors.</b> (RP-PROG-TP-403, section A 4.1, p. 19) Acceptable response: <ul style="list-style-type: none"> <li>• Prior to the first use of the day or shift</li> <li>• After a detector/cable change</li> <li>• After replacing batteries</li> </ul>		

When the trainee completes the **instructional** portion of this on-the-job training, both the instructor and the trainee must sign at the same time and date. When the trainee completes all **evaluation**, both the evaluator and the trainee must sign at the same time and date. (If more than one instructor or evaluator is involved, add names and signatures.)

Trainee Name (print):	Z#:
Trainee Post-Instruction Signature:	Date:
Trainee Post-Evaluation Signature:	Date:
Instructor Name (print):	Z#:
Instructor Signature:	Date:
Evaluator Name (print):	Z#:
Evaluator Signature:	Date:

## Section 3: OJT Evaluator Guide

This *OJT Evaluator Guide* provides all the information you need in order to understand the following:

- Instructions to the OJT Evaluator
- Evaluation criteria
- *Unsatisfactory OJT Evaluation with Remediation Steps* form (section 5)

### Instructions to the OJT Evaluator

#### CAUTION

**DO NOT ALLOW TRAINEE TO MAKE AN ERROR THAT WOULD PUT PERSONNEL, EQUIPMENT, THE ENVIRONMENT, OR THE FACILITY IN JEOPARDY AT ANY TIME DURING THIS EVALUATION.**

- ☐ Review evaluation rules with the trainee and ask if there are any questions before beginning the evaluation.
- ☐ During the evaluation, do not allow the worker to ask questions; do not coach the worker in any way. The worker may consult reference materials (**except** the *OJT Trainee Guide*) at any time during the performance evaluation but may not ask you to clarify on any task or item.

#### NOTE

The evaluator may require the trainee to talk through a performance step before performing it. The evaluator must take care not to agree or disagree with the trainee's statements; this would be coaching. However, an exact repeat-back is not coaching.

In cases where evaluation will involve the use of radioactive sources, utilize the following methods in the priority listed below.

1. Use actual sources.
2. Use Teletrix or other instrument simulators.
3. Supply the trainee with simulated source values.

- During the performance evaluation, ask safety and knowledge questions **verbatim**, including Safety Basis, TSR, and DSA questions, if applicable. Evaluate only knowledge and safety questions, as well as performance steps, that are included in the *OJT Trainee Guide*.
- As a trainee responds/performs acceptably to a question or performance task, write your initials in the "Sat." column. When every item is a "Sat.", submit the completed copy to your training coordinator or training administrator.
- If a trainee fails to answer safety/knowledge questions, or performs tasks/subtasks improperly, write your initials in the "Unsat." column. For all failures, you must complete the *Unsatisfactory OJT Evaluation with Remediation Steps* form (section 5) and submit it to the instructor as well as to your training coordinator or training administrator for recordkeeping purposes.

### Evaluation Criteria

Evaluate the trainee using the criteria below.

- If a trainee responds incorrectly to a safety-related question it is an automatic failure of this evaluation. Safety questions require 100% accuracy (including Safety Basis, TSR, and/or DSA questions, if applicable).
- The trainee must successfully respond to all knowledge questions with 80% or better accuracy.
- Incorrectly **performing** one (1) critical step or two (2) non-critical steps constitutes a failure of this evaluation.
- A **critical step** in a performance demonstration is defined as a step that, if incorrectly performed or performed in the wrong order, may cause the following: personnel injury or a safety issue; equipment damage or cause a Technical Safety Requirement/Review (TSR), and/or; significant recovery time.

**After completion of the OJT; The Evaluator shall complete the following for credit and record retention:**

- 1) Make a copy of the original record and retain at the facility. All OJT records will transfer with the RCT.
- 2) Email a scanned copy of the OJT to [RCT-OJT@lanl.gov](mailto:RCT-OJT@lanl.gov)
  - a. [The email must contain a complete copy of Sections 2 and 4 for credit.](#)
  - b. A copy of section 5 must also be included in cases where remediation is required.

Send the ORIGINAL record to the RP-PROG Group Admin office, MS K788.

## Trainee Evaluation of OJT Instruction and Evaluation

Please take the time to complete the following course evaluation after you have completed the OJT performance evaluation. Your feedback is important to assist us with the effectiveness of this course.

OJT #52275	Title: Operation of the Eberline/Thermo E-600 with SHP-380A/AB or GM Pancake Detectors
Date:	Instructor:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. This OJT was a good use of my time.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. This OJT will enable me to perform this task safely and correctly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. The learning objectives found in this OJT were appropriate to the task being trained.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. The performance evaluation portion of this OJT was effective at measuring how much I learned during the instructional portion of the OJT.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Rate your level of knowledge:	Low				High
Before the OJT instruction and evaluation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
After the OJT instruction and evaluation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If you marked "Disagree" or "Strongly Disagree" to any of the above, please let us know why (in detail):

What changes would you recommend to make to this OJT course more effective?

## Unsatisfactory OJT Evaluation with Remediation Steps

Task or Question #	Reason for failure	Remediation steps

Course Title: Operation of the Eberline/Thermo E-600 with SHP-380A/AB or GM Pancake Detectors	OJT #: 52275
Trainee Name (print):	Z #:
Signature:	Date:
Evaluator Name (print):	Z #:
Signature:	Date:

1. **THE TRAINEE MAY NOT PERFORM THE OJT TRAINEE GUIDE TASKS IN HIS/HER JOB UNTIL PASSING THE EVALUATION FOR THOSE TASKS.** The only exception is if he/she is supervised directly by a person qualified for those tasks.
2. The evaluator must provide remediation according to the above "Remediation Steps." When ready, the trainee must be evaluated a second time. This process continues until the trainee passes the evaluation.
3. Submit this form to the appropriate training coordinator or training administrator to file the original in the trainee's training records.

**Organization Name**  
RP-PROG

**Course Title**  
RCT: Module 2.01, *Radiological Documentation*

**Course Number**  
52130

**Revision Number**  
0.0

Developer	<u>Kurt Hillmer</u> Developer Name ( <i>print</i> )	<u>KURT HILLMER</u> (Affiliate) <small>Digitally signed by KURT HILLMER (Affiliate) Date: 2021.05.24 15:40:33 -06'00'</small>	<u>05/24/2021</u> Date
Subject Matter Review	<u>Matthew Hill</u> Subject Matter Expert ( <i>print</i> )	<u>MATTHEW HILL</u> (Affiliate) <small>Digitally signed by MATTHEW HILL (Affiliate) Date: 2021.05.24 16:06:47 -06'00'</small>	<u>05/24/2021</u> Date
Approval	<u>Keith Luna</u> FOD/Programmatic Representative ( <i>print</i> )	<u>KEITH LUNA</u> (Affiliate) <small>Digitally signed by KEITH LUNA (Affiliate) Date: 2021.05.26 08:18:00 -06'00'</small>	<u>5/26/2021</u> Date

This document does not contain scientific or technical information  
DUSA Designator: RADPRO



## Systematic Approach to Training Checklist

Course Title: RCT: Module 2.01, Radiological Documentation		
Course Number: 52130	Revision # 0.0	Date 05/11/2021
Developer: Kurt Hillmer		
Requester of Training: RP-PROG		
Description of Training Request: Course to support the RCT Initial Training Program.		
Target Audience Analysis: RCTs		

Analysis	
Course Drivers:	
<div><input checked="" type="checkbox"/> Federal or Other Regulations</div> <div><input type="checkbox"/> DOE Directives</div> <div><input type="checkbox"/> Consensus Standards (i.e. ANSI, ASTM)</div> <div>LANL Requirements:</div> <div><input type="checkbox"/> Policy/Procedure Change</div> <div><input type="checkbox"/> Notices</div> <div><input type="checkbox"/> Corrective Action Plan</div> <div><input type="checkbox"/> Qualification Standard</div> <div><input type="checkbox"/> Other (specify)</div>	<p>Title: 10 CFR 835 - <i>OCCUPATIONAL RADIATION PROTECTION</i> Specific Citation: §835.901 (a), (c) Radiation safety training</p> <p>(a) Each individual shall complete radiation safety training on the topics established at §835.901(c) commensurate with the hazards in the area and the required controls.</p> <p>(c) Radiation safety training shall include the following topics, to the extent appropriate to each individual's prior training, work assignments, and degree of exposure to potential radiological hazards:</p> <ol style="list-style-type: none"><li>(1) Risks of exposure to radiation and radioactive materials, including prenatal radiation exposure;</li><li>(2) Basic radiological fundamentals and radiation protection concepts;</li><li>(3) Physical design features, administrative controls, limits, policies, procedures, alarms, and other measures implemented at the facility to manage doses and maintain doses ALARA, including both routine and emergency actions</li><li>(4) Individual rights and responsibilities as related to implementation of the facility radiation protection program;</li><li>(5) Individual responsibilities for implementing ALARA measures required by §835.101; and</li><li>(6) Individual exposure reports that may be requested in accordance with §835.801.</li></ol>

<input type="checkbox"/> Federal or Other Regulations <input type="checkbox"/> DOE Directives <input type="checkbox"/> Consensus Standards (i.e. ANSI, ASTM) LANL Requirements: <input checked="" type="checkbox"/> Policy/Procedure Change <input type="checkbox"/> Notices <input type="checkbox"/> Corrective Action Plan <input type="checkbox"/> Qualification Standard <input type="checkbox"/> Other (specify)	Title: LANL Procedure P-121 Radiation Protection Requirements  Specific Citation: §832 (3).  (3) All RCTs must be trained, qualified, and requalified in accordance with RP requirements. This applies to all regular employees and subcontractors performing RCT activities (with the exception of work under an RSAA).
<input type="checkbox"/> Federal or Other Regulations <input type="checkbox"/> DOE Directives <input type="checkbox"/> Consensus Standards (i.e. ANSI, ASTM) LANL Requirements: <input type="checkbox"/> Policy/Procedure Change <input type="checkbox"/> Notices <input type="checkbox"/> Corrective Action Plan <input checked="" type="checkbox"/> Qualification Standard <input type="checkbox"/> Other (specify)	Title: RP-PROG-QS-002, <i>Radiological Control Technician</i>  Specific Citation: Attachment 1: Needs Analysis Report, Unit 2 – Site Academics  The following courses will be required for qualification:  1. Module 2.01 – Radiological Documentation 2. Module 2.02 – Communication Systems 3. Module 2.03 – Counting Errors and Statistics 4. Module 2.04 – Dosimetry 5. Module 2.05 – Contamination Control 6. Module 2.06 – Airborne Sampling Program/Methods 7. Module 2.07 – Respiratory Protection 8. Module 2.08 – Radioactive Source Control 9. Module 2.09 – Environmental Monitoring 10. Module 2.10 – Access Control and Work Area Setup 11. Module 2.11 – Radiological Work Coverage 12. Module 2.12 – Shipment and Receipt of Radioactive Material 13. Module 2.13 – Radiological Incidents and Emergencies 14. Module 2.14 – Personnel Decontamination 15. Module 2.15 – Radiological Considerations for First Aid
<input checked="" type="checkbox"/> Attach the analysis plan or briefly describe the analysis process used.	
See RP-PROG-QS-002, <i>Radiological Control Technician Qualification Standard, Attachment 2, Job Task Analysis Report</i> .	
<input checked="" type="checkbox"/> Attach the analysis results or list the duties and tasks.	
See RP-PROG-QS-002, <i>Radiological Control Technician Qualification Standard, Attachment 2, Job Task Analysis Report</i> .	
<input checked="" type="checkbox"/> Courses at LANL or in the DOE complex that were reviewed and <u>ARE</u> relevant to this course	
UTrain #32974, <i>RCT: Module 2.01, Radiological Documentation</i> UTrain #50916, <i>RPIN System Training</i> UTrain #42401, <i>Sentinel RWP Authority</i>	

<input checked="" type="checkbox"/> List any lessons learned or incidents relevant to this course			
N/A			
<input checked="" type="checkbox"/> List the names and title of personnel interviewed regarding course content (requester, managers, subject matter experts, expert performers, etc.)			
Keith Luna – RP- PROG Team Leader Matthew Hill – RP-PROG Training Coordinator			
Design			
Course Level Determination			
<input checked="" type="checkbox"/> Level 1 – Awareness	<input checked="" type="checkbox"/> Level 2 – Knowledge	<input type="checkbox"/> Level 3 – Application	<input type="checkbox"/> Level 4 – Mastery, Expert
Delivery Method <input type="checkbox"/> Web-based <input checked="" type="checkbox"/> Classroom <input type="checkbox"/> OJT <input type="checkbox"/> Other – RP Practical Facility			
<input checked="" type="checkbox"/> Terminal Objective: TO1: Given the need to perform duties as an RCT, recognize concepts of radiological documentation that pertain to the RCT position at Los Alamos National Lab in accordance with DOE-HDBK-1122, <i>Radiological Control Technician Training</i> .			
<input checked="" type="checkbox"/> Enabling Objectives: EO1: Recognize types of radiological records in use at LANL (2.01.01). EO2: Recognize radiological work controls contained within Radiological Work Permits (RWPs) (2.01.02). EO3: Describe the RPIN system (2.01.02). EO4: Explain the Electronic Document Records Management system and Locate RP Procedures using the EDRMS or other methods (2.01.03). EO5: Explain the requirements for the records management system, such as Quality Control (QC), auditability/retrievability, and management information at LANL (2.01.03).			
<input checked="" type="checkbox"/> Evaluation Criteria: <div style="margin-left: 40px;"> <input checked="" type="checkbox"/> RP-PROG Level 1 Evaluation Form  <input type="checkbox"/> Level II  <input type="checkbox"/> Quiz  <input checked="" type="checkbox"/> Test – UTrain TEST #27566 (≥ 80% required to receive substitute credit for Course 52130)  <input type="checkbox"/> Performance  <input type="checkbox"/> Other – provide details         </div>			

<b>Development</b>
<input checked="" type="checkbox"/> Attach Lesson Plan <input checked="" type="checkbox"/> Include the following: <ul style="list-style-type: none"><li>• Power Point Presentation, <i>RCT: Module 2.01, Radiological Documentation</i></li><li>• Self-Study Module, <i>RCT: Module 2.01, Radiological Documentation</i></li><li>• P-121 <i>Radiation Protection</i> (referenced sections)</li><li>• RP-PROG-TP-200, <i>Radiation Protection Manual</i> (referenced sections)</li><li>• ADESH-AP-006 <i>Records Management Plan</i> (referenced section)</li></ul>
<input checked="" type="checkbox"/> Pilot session: A pilot session was conducted on 05/10/2021.  Describe results: Feedback from participants was utilized to correct grammatical errors, clarify text, correct typos, and update web links.
<b>Implementation</b>
<input checked="" type="checkbox"/> Documentation: <ul style="list-style-type: none"><li>• RP-PROG Level 1 Evaluation Form</li></ul>
<b>Evaluation</b>
<input checked="" type="checkbox"/> Level I: Evaluation forms reviewed and feedback considered for implementation in future courses. <input checked="" type="checkbox"/> Level II: Students must receive a score of $\geq 80\%$ on UTrain TEST #27566 to receive substitute credit for Course #8772.